STEEL

The Metalworking Weekly

EDITORIAL INDEX

VOLUME 152

January 1 to June 30, 1963

Subject Index 2
Company Index 14

THE PENTON PUBLISHING COMPANY

Penton Building, Cleveland 13, Ohio

SUBJECT INDEX

A

Abrasives:
Heavy duty machining with abrasives, conference topic, 4/8, p.25

Africa:
Randall defends mine ownership in Africa, 4/22, p.210
South Africa welcomes U. S. manufacturers, 4/1, p.26

Aircraft:
Aluminum forgings for jet airfreighter, 2/25, p.66
Douglas launches DC-9 compact plane on civilian market, 4/15, p.29
DC-9 jet airliner, successor to DC-3, 5/6, p.92
DC-9 jets, financing plan (Douglas, subcontractors), 5/20, p.31
Executive planes made in Australia, 5/27, p.134
Helicopter—one seater powered by gas turbine, TO, 6/3, p.20
Slit wing—reduces air friction (Northrop LFC principle), 6/10, p.98
Supersonic commercial transport timetable, 1/28, p.18
Trisonic transport prototype, 2000-mile-an-hour, 6/24, p.19

Air Force:
Ultrasonic vibrations aid grinding (research project), 5/20, p.56
Weapons lab, N. Mex., 5/6, p.33

Air Pollution:
Canadian firm's air pollution control system, 4/8, p.27
U. S. steel closes California facility, fails to install air pollution equipment, 6/17, p.33

Alberta Research Council:
Low grade ore body processed, 1/21, p.50

Alexander Hamilton Institute:
Consumer debt nears danger point, 5/27, p.18
GNP forecast for year, 6/3, p.17

Alloys:
AISI 4130 forged cylinder caps, 1/28, p.55
Alloy for nuclear service, Pyromet 600, 6/10, p.145
Alloy (Hastelloy X) anchors hold furnace refractory, 6/17, p.74
Alloy plus stainless, composite for propeller shaft for outboard motor, 5/27, p.86
Alloys take minus 423° F, TO, 6/3, p.20
Aluminum alloy, X7039, high strength, 2/25, p.30
Aluminum casting alloys new at Alcoa (354-359), and structural alloys (6070-6061), 5/27, p.98
Brazing alloy-silver for aircraft, 2/18, p.58
Cobalt base alloy SM 322 new, 1/28, p.30
Columbium-vanadium INX 70, 6/3, p.29
Rene 41, heat resistant, machinability, 2/25, p.56
Tantalum alloy (T-111) new at Westinghouse, high temp. work, 1/14, p.26
Tantalum now on aerospace list, 2/11, p.90

Aluminum:
1965 and 1970 consumption forecast, 2/18, p.18
1962 aluminum output all-time high, 1/28, p.72
Aluminum from clay, Anaconda extracting process, 5/27, p.29
Aluminum electrical steels, TO, 6/10, p.20
Aluminum ingot prices, will they increase? 5/27, p.27
Aluminum pellets to sheet in one step (Reynolds new process), 4/1, p.39
Wire extruded (hydrostatic) from aluminum billet stock, 3/4, p.65
Where aluminum markets are, 6/24, p.30

Aluminum Plants:
Aluminium Ltd. acquires fabricating plants in U. S., 2/18, p.33
Aluminum reroll plant, Oswego, N. Y. (owners), 2/18, p.33
Continuous casting aluminum mill for Decatur, Ala. planned by Fruehauf and Hunter Eng., 3/11, p.33
Swiss affiliate (CAC) readies Tennessee reduction plant, 2/18, p.33

American Foundrymen's Society:
Castings congress, Slichter AFS president, manual of diecasting procedures prepared, 6/3, p.33

American Gas Assn.:
Moves headquarters, B, 4/15, p.33

American Gear Manufacturers Assn.:
Conference, elections: Ball president, 6/10, p.29
Connell Award to go to Schneider (Falk) in June meeting, 5/13, p.35
Elects, B, 6/3, p.35

American Institute for Imported Steel Inc.:
Graubard: Antidumping amendment could kill international commerce, 6/17, p.117

American Institute of Mining, Metallurgical & Petroleum Engineers:
Meeting report: Self-fluxing pellet production, 3/4, p.62
Mining symposium (iron ore slurry pipeline), 1/28, p.30

American Institute of Steel Construction:
Fabricated structural steel sales forecast, 1/7, p.259

American Iron & Steel Institute:
Aim at world competition (meeting report), world production and steel mills, 5/27, p.23
Dr. Suits (GE) gives Schwab Memorial Lecture: Behind in metals research, 5/27, p.24
Conveyor belt wins design award, 3/18, p.114
Hourly employment costs, 1940 to 1961, 2/25, p.17
Orientated electrical steel, M-4, 4/22, p.140
Oxygen processes and continuous casting, highlights of technical sessions, 6/3, p.71
Roche, president, 4/15, p.19
Stainless steel producers listed, 3/18, p.104 and 4/1, p.46
Steel industry resurgence, meeting report (editorial), 5/27, p.15
Steele (Wheeling) stresses manpower needs, 5/27, p.24

American Machine Tool Distributors' Assn.:
Invites participation by industry, 4/15, p.18
Meeting report, forecast, 4/15, p.26

American Management Assn.:
Packaging conference report: Metal can on way out, composites use, 4/29, p.25
Personnel conference (industrial relations executives role measured in company profitability), 2/18, p.26

American Society for Abrasives:
Conference topic, heavy duty machining with abrasives, 4/8, p.25

American Society of Mechanical Engineers:
Design engineering conference progress reports, 5/13, p.68
Design show, new ideas, techniques, 5/27, p.25

American Society for Metals:
Announces Western Metal Show to be held yearly, 4/1, p.26
Announces co-op program with STME for additional shows, Brussels and West Coast, 5/27, p.91
ASM Metals/Materials Show, new name for Metal Show, 5/27, p.91
Computer - searching literature: Who should use the service (Freeman report), 3/4, p.58

American Society for Quality Control:
Elects president, B, 6/3, p.35
Feigenbaum: Quality control costs lowered by 'prevention work,' 5/27, p.98
Feigenbaum: Systems engineering, route to better quality, 6/3, p.29
Stresses quality information equipment, 6/10, p.119

American Society for Testing & Materials:
Adds metric data to publications, 3/11, p.31

American Society of Tool & Manufacturing Engineers:
Chicago show, speakers, 5/6, p.27
Machining progress report by Kronenberg (consultant), 5/13, p.20
Price (Westinghouse) gets progress award, 5/6, p.27
Research grants for manufacturing study, 3/11, p.67
Tool selection study workshop, B, 6/24, p.35

American Supply & Machinery Manufacturers' Assn.:
Price (president) takes aim at profit improvement, 6/10, p.29

American Welding Society:
Brazing standard established, TO, 6/3, p.20
President foresees welding growth (Show features), 4/15, p.62

American Zinc Institute:
Elections, Young president, 5/13, p.33

Analysts:
N. Y. security analysts meet: Man on moon would stimulate business, 4/29, p.27

Appliances:
Clothes dryers, industrywide sales promotion campaign, 2/4, p.47
Electrical appliance sales 1st quarter, 5/13, p.18
Washer, dryer shipments, 5/6, p.19
Cryogenic refrigerator — 50 lb. (GE), 1/21, p.17
Cryogenic refrigerator runs four years, 2/18, p.20
Laundry appliance sales, 4/1, p.19
Refrigerators-thermoelectric, 2/25, p.62

Area Development:
ARA aids depressed communities (Roblin-Seaway continuous casting mill at Dunkirk, N. Y.), 4/1, p.57
ARA and SBA changes aid small-medium firms land government contracts, 4/15, p.93
Submerged land in Lake Michigan reclaimed for steelworks by U. S. Steel, 5/6, p.18
Urban renewal spending, 4/29, p.18

Argonne National Laboratory:
Advanced computer installed, 3/11, p.20

Armour Research: See Illinois Inst.

Astronautics: See Space Materials

Atomic Energy:
AEC cites byproducts of A-Plane research, 4/1, p.61
AEC plans high energy accelerator, TO, 3/11, p.20
Antarctic atom plant, TO, 6/10, p.20
Atom smasher aided by superconductivity, Stanford U., 5/13, p.86
Coal mining, clean nuclear devices, 5/13, p.76
Ion beam controls amounts of 'impurity' atoms, 3/25, p.20
Neutron activation analysis systems (Kaman), 6/10, p.103
Nuclear fuel element, new and cheaper, 4/8, p.20
Nuclear fuel elements at Sylcor provide nuclear test flexibility, 5/6, p.87
Nuclear power by year 2000 will take over electrical, 2/11, p.19
Price (Westinghouse): Miraculous developments, 4/8, p.18
Pulse nuclear reactor readied at Univ. of Buffalo, 3/25, p.20.
Shipping containers for spent nuclear fuel elements, 6/10, p.115

Auditing:
Audit your purchasing for greater profits, 1/7, p.141

Australia:
Aluminum import licensing system, 4/1, p.97
Aluminum ingot price cut, 4/8, p.104
Annual leave increases makes world's lowest work hours, 5/13, p.145
Auto sales up, 4/15, p.121
Automakers expansion spending, 4/29, p.87
Bauxite lease, 4/22, p.208
Motor vehicles registrations, 3/11, p.97
Tariff laws force foreign builders to establish subsidiaries in Australia, 1/21, p.81
Tourists now top ten exchange earners, 1/21, p.81
Victa makes executive airplanes, 5/27, p.134

Automation:
AMF—search for things to automate, 2/4, p.35
Automation speeds auto door lock assembly, 5/6, p.91
Brazing automation (Ohio water valve firms), 2/25, p.48
How to automate a steel plant (English computer system), 1/14, p.42
Japanese carmaker automates production control system, 6/10, p.100

Automotive:
1963: Automakers foresee '62 profit pace, 2/18, p.28
1963: How automakers will hold price line, 1/7, p.281
1963: Detroit confirms trend toward bigger cars, 3/11, p.89
1963: Detroit's thinking about (disc brakes vs sintered linings, sealed cooling systems, plastic uses), 3/4, p.95
1963 pace influences—what metalworking managers expect in 2nd half, 6/24, p.62
1963 sales add fillip to metals consumption, 6/17, p.109
1964 models take shape, 2/18, p.91
1964 sales outlook stirs competition, 4/29, p.79
1972: 100 million vehicles plus on road, 3/4, p.18
Aluminum radiators, 3/4, p.95
Aluminum trim on Dodge race cars, 2/18, p.92
Aluminum usage by 1967, 3/18, p.17
Battery powered delivery trucks, 4/8, p.96
Capital outlays may accelerate in '63, 1/21, p.71
Capital spending, 6/3, p.94
Car production record (3 millionth '63 car), 1/28, p.27
Car production (five companies) per cent breakdown, 4/1, p.24
Cars shipped overseas '62, 2/11, p.165
Cargo trailers, 'bus' trains fly and float (Dodge Truck forecasts), 5/20, p.92
Carmel (made in Israel), undercuts prices, 5/6, p.130
Castings, thin wall, 3/18, p.169
Castings of nodular iron, 3/18, p.169
Chevrolet introduces Corvair 'idea car,' 4/22, p.200
Chevrolet to offer five lines in '64, 4/22, p.199
Chevrolet uses more nodular iron, 3/18, p.168

Chevrolet to use more diecast zinc grilles, 3/18, p.170
Chrysler's new team clicks in comeback (earnings, new developments), 2/4, p.75
Chrysler buys controlling interest in Simca, 2/4, p.75
Chrysler engine plant: 'Practical' machining pays off, 3/25, p.169
Chrysler's turbine car tests, 5/13, p.138
Chrysler's turbine car (pic): Consumers to help decide future, 5/20, p.29
Compacts in '64 are longer, 2/18, p.92
Contract talks (see Labor)
Convertibles: Style conscious buyers accelerate sales, 4/15, p.113
Corrosion study at Ford, 'probable' conclusions, 1/14, p.76
Diesel fuel combustion system (Hercules), 6/24, p.112
Disc brakes vs sintered linings, 3/4, p.95
Disc brakes, AMC test, 4/29, p.80
Door lock assembly, automation, 5/6, p.91
Dual exhaust systems shift back, 6/24, p.111
Exhaust system (chambered pipe) will displace muffler, 3/4, p.17 and 3/11, p.90
Federal revenues from taxes, automotive products, 3/25, p.
Fiat price cut in Germany, 1/21, p.72
Fiberglas use predicted, 4/1, p.90
Ford-Cologne uses powder metal parts, 1/28, p.95
Ford showing at Monaco, 1/14, p.75
Foreign carmakers in style trap (Fiat, Renault, Morris Mini-Minor, etc.), 6/3, p.93
Foreign cars boost stainless usage, 2/11, p.165
Foreign producers expected to cut prices, 1/21, p.72
Foreign sales in U. S. predicted, 4/8, p.103
Gas turbines, Rover Co. Ltd., 1/28, p.88
GM-AC Spark Plug, magnesium diecasting tips, 5/20, p.91
GM: Antitrust probe, 5/27, p.125
GM's Barr looks at future engineering, 4/1, p.89
Horsepower (AMC warns against competitive race), 1/28, p.88
Hydrostatic drive, forecast, TO, 5/20, p.20
Iron powder use, 1/28, p.17
Japanese conveyor assembly line (automated production control), 6/10, p.100
Lead, zinc consumption heavy, 5/6, p.115
Magnesium aluminum alloy for '64 cars, 3/11, p.18
Magnesium diecasting tips, auto consumption, AC Spark Plug use, 5/20, p.91
Mardi-Car, golf course-supermarket use, 6/17, p.110
Materials battle rages on '64 designs (plastics vs metals), 1/28, p.87
Mercedes-Benz 230 SL replaces touring sports car, 4/29, p.80
Metalmen revise '63 estimates, 6/17, p.109
Noise and vibration test (GM), 1/7, p.281
Plastic, new uses, 3/4, p.96
Plastics potential, 4/1, p.90
Plastic chrome plated parts for '64, 4/22, p.200
Plastic laminate for auto-truck parts, 5/20, p.55
Quality capability studies-machine tools, 5/13, p.137
Renault (Grob): U. S. makers of auto parts ignore importers (good markets), 2/25, p.29
Renault's new automatic shift, 4/22, p.199
Russia's 1st compact, 2/18, p.99
Seat belts standard in '64? 1/21, p.72
Smog control 'afterburner' tested in Calif., 1/21, p.72
Smog burner (AMF), 5/6, p.89
Smog control system (Canadian firm), 4/8, p.27
Sports cars, larger market looms (Corvair revamped), 6/24, p.111
Stainless coat for auto trim (Du Pont), 3/18, p.25
Stainless trim corrosion test—10 minute (Union Carbide), 1/28, p.58
Steel consumption-percent (table), 4/8, p.96
Steel increase could cause $50 boost in '64 cars, 4/22, p.27
Stretch forming, then stamping into shape, 5/13, p.138
Studebaker maps drive to make cars pay off (earnings report), 2/25, p.93
Suppliers ignore good market, importers (Renault's Grob asserts), 2/25, p.29
Tomorrow's car: Auto Familia (Studebaker), 2/11, p.166
Turbine engines on way (Ford agrees), 5/6, p.121
Turbine engines, metals usage, 6/17, p.110
Volkswagen gap presses for roof stamping, 2/4, p.27
Volvo develops turbine transmission, 1/28, p.88
Warranties battle: How far will it go? 4/8, p.95
Warranty costs reduced with quality capability studies, 5/13, p.137
Windshields to adjust to light, 3/18, p.170
World auto production, 2/18, p.99
World producers in '62, 3/4, p.103

Awards:
AISI design award (conveyor belt), 3/18, p.114
E-Flag award to F. J. Stokes Corp., 4/15, p.121
New Jersey Zinc's awards: Copper powder auto rectifier base, 4/15, p.31
STEEL award from Freedom Foundation, 2/25, p.17

B

Balance of Payments:
U. S. deficit in 1st quarter '62, 3/4, p.103

Bars:
Automatic bar classifier detects seams, 5/27, p.31
Bethlehem's new 8 in. bar mill 'Pacesetter' at Johnstown, Pa., 6/3, p.33
Concrete reinforcing steel bar shipments, 1/7, p.260
Merchant steel bar shipments, 1/7, p.260
Super Surface bar, LaSalle Steel developments, 5/27, p.25

Battelle Memorial Institute:
Hydrostatic extrusion, wire directly from aluminum billet stock, 3/4, p.65
Rolls heated to red heat to make strips, 3/18, p.20
Tungsten sheet fabrication data, 3/4, p.20

Bearings, Bushings:
Fretting corrosion in bearings cut by liquid plastic sealant, 1/28, p.48
Hydrostatic bearing (rolling mill) uses high viscosity lubricant, 5/20, p.71
Linear roller bearing, 5/27, p. 25
Rotech Inc., large diameter wire race bearings, 5/27, p.26
SKF lab seeks answers to bearing users problems, 6/17, p.33

Belgium:
Economic expansion program, 1/28, p.96
Tax law lenient, 1/14, p.83; indirect tax system, 3/18, p.178

Beryllium:
Autonetics Div. reports instruments made of beryllium, stability and accuracy, 6/17, p.85

Big New Markets: See Steel (Features)

Biomedical Markets:
Bio-Medical Engineering conference: Imagination pays off, 4/15, p.91

Blast Furnaces: See Steelmaking

Blasting: See Cleaning, Blasting

Bonding:
Bonding tape (rejected) reclaimed for forming material, 6/24, p.81
Ceramic-metal bond, 3/18, p.111
Chemical bond strengthens fastener (Jay-Lok), 5/6, p.31
Graphite bonding process (Tokyo Science Inst.), 1/14, p.20

Books, Booklets:
Brittleness of steel, 4/1, p.118
Collective bargaining in Sweden, 2/25, p.122
Economics, an analytical approach, 4/8, p.124
Guide to tolerances and finishes, 2/18, p.56
Kaiser progress sharing booklet, 1/14, p.23
Manufacturing engineering, 4/8, p.124
Materials handbook for managers, 3/11, p.118
NAPA book, Evaluation of Supplier Performance, 4/8, p.68
NASA fact book (parts list), 3/4, p.72
Overseas investment handbook, 2/18, p.99
Parkinson's In-laws and out-laws, 2/25, p.104
Physical chemistry of iron and steelmaking, 2/18, p.120
Powder metallurgy progress, 3/25, p.202
Spain, economic development of, 1/28, p.115
Supervisory action, front-line management, 2/18, p.120
USW 'Shorter Work Week', 1/28, p.18
Welding handbook, 3/25, p.202

Brazing:
Automated brazing at two Ohio water valve firms, 2/25, p.49
Brazing with electron beam; Aussies try spray braze, 4/29, p.20
Outlook for new methods, materials, 4/15, p.68

Bridges: See Construction

British Iron & Steel Research Assn.:
Aluminum electrical steels, TO, 6/10, p.20
Electroslag remelting progress, 1/14, p.20
High purity iron made in 40 minutes, 3/11, p.64
Waste heat from furnace to generate electric power? 6/10, p.170

British Nonferrous Metals Research Assn.:
Transformer safety by employing copper-cold worked, 3/4, p.20

Business & Defense Services Adm.:
Annual forecast reflects business confidence, 2/11, p.17
Exports up in 8 categories, 3/25, p.177
Scrap industry problems studied, 3/11, p.33
Surveys numerically controlled tools, 6/3, p.18

Business (Economy):
1963 key to success held by industry itself (domestic-foreign investments), 1/7, p.17
1963 issues key to outlook (tax legislation, gov't-business relations, balance of payments), 1/21, p.75
How JFK and advisers (Heller) propose to spur economy (tax cut, R&D, wage-price guideposts), 1/28, p.25
Business cycles (Dawson, Nat'l City Bank), 2/4, p.79
Consumer-government buying will keep business high through '63 (Gainsbrugh-NICB), 6/10, p.25
Consumers and jobs, how to create, 6/17, p.56
Economic growth linked to high rate of fixed investment (international report) OECD, 2/4, p.52
GE's McCune: Business incentives need booster, 4/15, p.124
Industrial pace matches record, 5/13, p.141
Metalworking orders — show of strength hikes optimism (STEEL survey), 3/4, p.25
Metalworking sales record high, 6/17, p.113
Metalworking managers, what they expect in 2nd half, 6/24, p.63
Optimism obscures recession talk, 3/11, p.93
Presidents panel (NICB) predict uptrend in three major markets, 3/25, p.26
Reappraisal of 'booming sixties' (lead story), 5/20, p.25; why business is so good, 5/27, p.129
STEEL Panel forecast: Sidewise swish plus optimism, 4/15, p.25

Business Leaders:
Brower (BBD&O) appraises businessmen, 1/21, p.82

Business Processes:
How to cut cost of 'business processes' (engineering, planning, selling, supervising, accounting) 5/13, p.79

Business Projections:
Year 2000: Same problems, but higher numbers, 4/1, p.25

C

C.O.S.T.:
Scully-Jones marketing (coordination of spindle-type tooling), 4/8, p.80

Cadmium: See Stockpiles

Canada:
Auto boom, 6/10, p.162
New government seeks closer ties with U./S.: Ontario's Macaulay sums up, 4/29, p.26
Nova Scotia seeks new industry, 6/24, p.32

Cans, Canmaking:
AMA conference: Aluminum beer can, other developments, 4/29, p.25
Aluminum beer cans impact formed, 5/13, p.82
Aluminum can plant, Nova Scotia, 6/24, p.32
Can seam soldering machine, TO, 5/6, p.20
Tin cans for soft drink markets 2/18, p.33

Capital Expenditures:
Autodom's spending, '63 outlook, 1/21, p.71
Capital spending, projection by year 2000, 4/1, p.25
Commerce Dept. and SEC survey, estimate of '63 business spending; Paradiso reports not enough to boost economy, 3/18, p.26
Companies set up formalized spending programs (NICB report), 4/1, p.24
Construction, machinery and appliances, uptrends predicted, 3/25, p.26
GM to boost spending, home and abroad, 2/25, p.26
How job shops should buy capital equipment, 4/1, p.44
Metalworking presidents surveyed on '63 equipment buying (tax cut holds key), 1/14, p.21
Metalworkers challenge depreciation 'benefits', 2/18, p.29
New plant and equipment, 2nd half (Commerce and SEC), 6/17, p.26
Steel modernization - expansion programs, 1/7, p.33
Steelmakers' '63 plans, 1/14, p.22

Carbon:
New forms of carbon improve furnace insulation, 5/6, p.76

Carroll University, John:
Seminar for steel producers, 1/28, p.27

Case Institute of Technology:
Glennan: R&D expenditures by 1968, 1/7, p. 20

Cast Iron:
BISRA new tech. makes high purity iron in 30 minutes, 3/11, p.64

Casting, Castings:
Continuous casting (50 firms active), 3/25, p.29
Continuous casting aluminum mill, Decatur, Ala., 3/11, p.33
Continuous casting combine formed in Europe, 3/25, p.177
Continuous casting firm (Roblin-Seaway), 1/28, p. 31 and new mill in Dunkirk, N. Y., 4/1, p.57
Continuous casting automatic control device, 6/3, p.27
Continuous casting, horizontal rather than vertical unit, 6/3, p.27
Continuous casting breakthrough with horizontal instead of vertical unit (Concast predicts), 6/17, p.71
Continuous casting line, (Connors Steel) really continuous, 3/25, p.31
Continuous casting machine (Armco's Sand Springs Wks.), 4/1, p.17

Continuous casting mill for Tennessee (Rebel Steel), 6/10, p.31
Continuous casting machine (Koppers) for square billets, 3/18, p.33
Continuous cast wire (H. K. Porter), 5/6, p.74
Continuous cast steel bars replacing ingots at new plant (Roanoke Electric, Roanoke, Va.), 5/13, p.29
Continuous casting unit (U. S. Steel) annual report gives 'peek', 3/25, p.31
Continuous casting Russian license sought by U. S. firms, 6/17, p.29
Design high cost of precision out of investment castings (guide rules-tolerances), 1/21, p.41
Fluted, octagonal ingot molds improve metal, 3/4, p.20
Green sand mold, problem, TO, 5/20, p.20
Plastic foams make good patterns, 4/1, p.20
Pressure casting of steel wheels automated, 3/4, p.62
See also Diecasting

Ceramics:
Engineers find new ways to manage heat, 1/14, p.35
GE ceramic made of powder, hard as sapphire, 2/25, p.19
GE ceramic (Lucalox) packs big punch in materials war, 3/4, p.56
Strain-hardening strengthens brittle ceramics, 3/4, p.20

Chemicals:
Anticorrodant (enzymatic deoxygenation), TO, 6/17, p.20
Chrysler stamping plant develops drawing compound, 6/10, p.31

Chicago:
1962 GNP in Chicago area, 1/7, p.28
Survey of businessmen for '63, 2/4, p.18

Chicago World Trade Conference:
Metalworkers bullish on world market opportunities, 3/11, p.25

China:
Mainland's recession on way out, 5/6, p.130
Will Chinese Reds push into global auto sales race? 2/4, p.84

Chrome:
Soviets dump chrome in Europe, 4/8, p.24
See also Nonferrous

Circuits: See Electric

Civilian Industrial Technology Program:
R&D export-Hollomon: Emphasis on community problems, seeks federal funds, 2/4, p.22

Cladding:
Copper clad laminated plastic can be punched, 4/1, p.52

Cleaning, Blasting:
ACF installs grit blast cleaners at two plants, 2/25, p.71
Small blaster (Lukens Vacu-Blaster), slab cleaner-dust free, 1/28, p.54

Coal & Coke:
Metallurgical coke made from noncoking coal, 3/11, p.19
Nuclear developments aid coal mining research, 5/13, p.76

Coal Injection: See Steelmaking

Coatings:
See Electroplating
See Finishes, Coatings

Cold Forming:
Cold forming puts heat on costs (cover story), 5/20, p.49
Cold forming, extrusion joined to turn out fasteners (Raycarl process), 5/27, p.83
Domestic vs foreign, an evaluation, 5/20, p.53
Precision tubing cold formed (Flo-Rol) in steel and nonferrous metals, 1/21, p.42

Cold Heading:
Cold headed beryllium copper fasteners, Hubbell Inc., 6/3, p.73 and 6/24, p.71

Communications:
AT&T center for communications review, 3/25, p.83
Japanese job shop: Simple signal method boosts productivity, 4/29, p.50
Dr. Laitin (SRA): How to counter employee resistance to change, 3/11, p.29
Dr. Likert: Flaws in communication stifle good ideas, 1/14, p.86

Community Progress:
Detroit labor-management committee for community progress, 3/11, p.19

Components:
1st quarter survey, 2/4, p.24
2nd quarter survey, 5/6, p.29
PAs see price trends for rest of '63, 6/10, p.26

Computers:
Articles:
Where buttons mean billions, 4/8, p.52
Where computers call the shots best, 3/11, p.49
1975: RCA predicts 75,000 computers, 4/3, p.18
AISE (Komjathy) speaker: Computers cut steel costs, market seen for 4000 units, 2/11, p.98
ARCH system for small companies (British firm), 3/11, p.56
ASM's searching literature service, who should use? 3/4, p.58
Automatic design researched for AF by M.I.T., 6/24, p.70
COINS symposium, Northwestern Univ.: Adaptive systems needed for 'machines that learn,' 6/24, p.30
Computer dictionary, 3/11, p.55
Computer service (GE) for small firms, government agencies, 3/4, p.69
Computer speeds micrograph analysis, 1/28, p.54
Cost performance via engineering function (CPM, PERT), 1/7, p.131
Digital computer on cameras in aerial reconnaissance plane, 3/11, p.20
Drafting and computer designing tech., 1/7, p.137
Drucker (N. Y. U.) attacks nonselective use of computers, 3/18, p.180
Japan's Nippon Kokan controls L-D furnaces with computer, 4/8, p.23
Japanese automaker automates production control system, 6/10, p.100
Library use insufficient, 4/15, p.20
Magnetic memory disc designed for small businessman, 4/1, p.19
Manager's role spells computer success, 4/22, p.31
Managers urged to use data processing in inventory control as well as accounting, etc., 4/1, p.67
Marketing computer role, 2/11, p.176
Postprocessor (Gecent) speeds tape contouring, 1/14, p.40
Postprocessors added to Univac's Sympac, 2/25, p.59
Process controls only, market forecast for industries, 3/11, p.59
Process controls — where buttons mean billions, 4/8, p.53
Production information, computer via IBM data collection system, 6/10, p.18
Put computer to work on NC instructions, 4/8, p.67
RT&B (management organization chart-computer) England: How to automate a steel plant, 1/14, p.42
Reference computer (roundness determinations), TO, 4/8, p.20
Systems concept worked in computer installation, Kitchens of Sara Lee, 6/17, p.28
Tunnel diode, switching device for computers, 5/13, p.94
Univac's little (17 lb) computer introduced, 1/28, p.17
See also Management Systems
See also Steel Mill Controls

Construction:
1962 industry (totals, per cent changes), 1/14, p.18
1963 predictions, ASCA, 1/7, p.19
Nunlist (Worthington): Predicts uptrends, 3/25, p.26
Staten Island - Brooklyn bridge cables spun, 3/18, p.112

Construction Equipment:
Industry report: Executives surveyed at Chicago Road Show, 3/4, p.27

Consumer Credit:
Consumer debt nears danger point (Alexander Hamilton Inst.), 5/27, p.18

Consumer Price Index:
Relationship between steel prices and CPI, 4/22, p.26

Consumer Spending:
Consumer spending in other countries follows U. S. trend, 2/4, p.83
How to create consumers (unemployment problem), 6/17, p.55
Metalworking loses traditional share to other fields (chart), 2/4, p.34
Why business will stay high in '63, 6/10, p.25

Copper:
Cold worked copper insures safety in transformers, TO, 3/4, p.20
INCRA's research programs, U. S. and Europe, 6/3, p.53
See also Nonferrous

Copper & Brass Research Assn.:
1963 sales outlook for aluminum, copper, titanium, 1/7, p.31

Copper Development Association:
Formed, eventually to replace CABRA, 1/14, p.26 and 5/20, p.28

Corrosion:
Aluminum heat exchanger beats corrosion in refinery, 3/4, p.19
CEI powerplant, stainless tubing solves problems, 1/21, p.44
Chemical anticorrodant (enzyme deoxygenation), 6/17, p.20
Corrosion rates of resistant alloys in heat transfer equipment tested, 4/8, p.64
Fiberglas reinforced plastic for corrosion environments forecast, 4/8, p.73
Fretting corrosion in bearings cut by liquid plastic sealant, 1/28, p.48
NACE evaluates tests for metals, 4/15, p.20
Swedish standards for corrosion care, 1/21, p.20

Cost Cutting:
Burnham (Westinghouse) cost cutting tips, Westinghouse Machine Tool Electrification Forum, 6/17, p.27
How to cut cost of 'business processes' (engineering, planning, etc.), 5/13, p.79
Material handling—cost cutters' challenge, 2/11, p.84
Metalworking: 4 cents reduction adds 40c to each profit dollar ('63 challenge), 1/7, p.129

Cost Improvement Programs: See Management Systems

Council for International Progress in Management:
Manila conference, 1/7, p.289

Cryogenics:
GE-small cryogenic refrigerator, 1/21, p.17

Crystals:
Designers push materials (xenon tetrafluoride compound), 5/13, p.63
Electroluminescent diode makes bright light (tiny chip of crystalline), 2/18, p.20

Cuba:
USSR to build steelworks, Oriente province, 1/7, p.289

Customer Service:
Aluminum Extrusions opens office, fills small orders, etc., 3/11, p.65
Standard Pressed Steel: Quality assurance service (IDQA), 1/28, p.53

Cutting Fluids: See Lubricants

Cutting, Shearing:
Airplane wing cutting, laminar flow control at Northrop, 6/10, p.98
Hydraulic shear trims hot slabs, 6/24, p.76
New (special milling) saw cuts costs, delivery time (Alloy Steels warehouse), 4/1, p.48
Scrap cutting dock, gantries have powder cutting torches, 6/10, p.115

Czechoslovakia:
Holub roll forging process (Letany at Prague), 5/6, p.72
Plasma torch runs on water, 3/4, p.20
Plasma torch lauded by Czechs, 6/17, p.82
Powder metal growth, 1/7, p.168

D

Data Processing:
EDP used by Holley Carburetor in purchasing, 4/29, p.49
Japanese carmaker automates production control system, 6/10, p.100
Venders-data retrieval system at General Dynamics, 5/6, p.87
See also Computers

Defense:
1963-64 defense spending, 1/21, p.26
Big new markets of '60s: Where defense markets are headed, 5/27, p.74
Budget points up changing defense spending pattern, 1/28, p.26

Defense Contracts:
ARA, SBA aid small firms to get contracts, 4/15, p.93
Bundy: Defense contractors, with federal assist, could double defense exports, 4/1, p.23
Contract language, watch—it can save your business, 6/3, p.61
Douglas Aircraft and subcontractors join in novel financing plan for DC-9 jets, 5/20, p.31
Guidelines (LMI system) proposed to determine profits in negotiated contracts, 2/25, p.25
Guidelines approved for defense contract profits, 5/13, p.19
McNamara: Defense orders to go to efficient firms, 2/11, p.28
Space contracts-participation (Chicago Space Conference reports), 5/13, p.27
Turbine industry awaits ruling on foreign bids, 3/11, p.28
Turbine contract favoring Allis-Chalmers protested by Hitachi, 5/13, p.92

Defense Supply Agency:
Auctions surplus items, Las Vegas, 2/4, p.42
Centralizes equipment authority, 1/21, p.50
Warranty program set for surplus buying (DLSC), 5/13, p.93

Depreciation:
Impact of depreciation rules shows up (speeds cash flow, capital spending plans slow), 2/11, p.25
Incentives boost earning power of investment dollar, 1/7, p.154
Metalworkers challenge new guideline benefits, 2/18, p.29
NMTBA: Impact of depreciation reform gradual, 3/4, p.17
Steelmakers, what new guidelines mean (chart), 2/11, p.26

Descaling: See Ultrasonics

Design:
Arwood's design guide rules for investment casting, cost reduction for precise tolerances, 1/21, p.40
Automotive style cost cutting—eight stumbling blocks to effective design, 1/7, p.282
Case for design beyond engineering (value analysis), 5/13, p.71
M.I.T. developing automatic design for AF (computer-engineer, man-machine designing team) 6/24, p.70
Plasticsmakers woo design engineers, 2/11, p.29

Design Show:
New York conference, show (report), 5/13, p.68 and 5/27, p.25

Detroit:
Labor-management committee for Community Progress, 3/11, p.19

Diamonds: See Industrial Diamonds

Diecastings:
Cook stove door frames diecast in zinc, 1/28, p.58
GM gets giant diecaster, 4/29, p.29
GM's magnesium diecasting, AC Spark Plug, 5/20, p.91
Infrared detectors protect diecasting dies, 6/3, p.60

Magnesium diecasting tips, automotive use, 5/20, p.91
Robot type handling devices, 2/25, p.48

Dies: See Tools & Dies

Diffusion Bonding: See Welding

Direct Reduction:
Arkota, Gulf States, Sovereign debuts hit problems ('Little 3'), 2/11, p.29

Disposal Plans: See Stockpiles

Distribution: See Warehousing

Distributors:
ASMMA conference takes aim at profit improvement, 6/10, p.29
Nelms: Industrial distributors unique in economy, 1/14, p.86
Survey of industrial distributors for '63, 3/11, p.17
Minneapolis-Honeywell problem, an overgrown product line was havoc for distribution, 1/7, p.162
Scully-Jones tool distributors learn C.O.S.T marketing system, 4/8, p.60

Diversification:
DTL: Aid to product diversification, 2/25, p.30

Dividends: See Financial

Drawing:
Astroluster tubing, drawing process makes smoother finish, 3/18, p.108
Better drawing lubes found, TO, 3/11, p.20
Drawing compound, Chrysler stamping plant, 6/10, p.31

Drilling:
Bore drilling lowers reject rate, 5/27, p.94
Gun drilling saves on short holes (rifle part), 2/11, p.92

Drives, Controls:
Gar Wood features individual hydraulic motor drives, 3/4, p.20
Hydrostatic drives, TO, 5/20, p.20
Reliance Electrical's new solid state speed drives, 1/21, p.29
U. S. Steel contract with Reliance Electric, 1/21, p.30

Dumping:
Soviets dump chrome in Europe, upgraded into ferroalloys, 4/8, ing)
See also Steel Dumping

E

Earthmoving Equipment:
Giant trucks move materials, 2/11, p.84

Eddy Current: See Inspection, Testing

Editorials:
Back to the Market Place, 4/22, p.15
Be a Profit Seeker, 1/7, p.15
Can You Compete? (foreign markets), 1/14, p.15
Challenge in Materials! 2/4, p.15
Exploring New Markets, 2/18, p.15
Facts and Figures, 3/25, p.15
Fiscal Fitness, 3/11, p.15
If Wives Travel (conventions), 5/20, p.15
Jobs—Our Jobs, 6/17, p.15
Keeping Up With Joneses (R&D vs Space funds), 5/13, p.15
Lesson in New Orleans, 6/10, p.15
Let's Bake a Bigger Pie, 3/18,
Moderation, Please ('63 price-wage theme), 4/29, p.15
p.15
Operation Resurgence (AISI meeting reports steel industry), 5/27, p.15
Opportunity Vision (new markets), 2/11, p.15
Play Fair on Engineering! 3/4, p.15
Read the Signs! (technological and market changes), 5/6, p.15
Selling the New Markets, 1/28, p.15
So We Have Troubles! (Europe's problems), 4/1, p.15
The Big New Markets, 1/21, p.15
The Human Factor (business trends), 4/15, p.15
The Challenge of Jobs, 2/25, p.15
Turning Tide? (Financial Analysis), 4/8, p.15
What Doldrums? (metalworking, 2nd half), 6/24, p.15
What Price Imports? 6/3, p.15

Electric:
Integrated circuitry, 4/29, p.40
How to get reliable percussive welds in electrical connection, (Coyne-Bell Telephone), 6/3, p.70
Material (boron nitride) conducts, insulates, 4/8, p.59
Thin film circuits, semiautomatic cycle (Melpar), 4/22, p. 33
Thin film circuits, Western Electric, 4/22, p.33

Electric Power:
Converting heat directly into electric energy: Dr. Pidd addresses Power conference, 4/8, p.67
Detroit Edison generator, digital directed analog control system, 4/22, p.31
Fuel sources for 1980's generation, 4/1, p.17
MHD generators teamed with superconducting magnet, 1/14, p.17
New Zealand's hydroelectric facility powered by glaciers, 5/13, p.145
Tidal power to general electricity, Australia, 3/18, p.178
Waste heat from furnace to generate power? 6/10, p. 170

Electroforming:
Ultrasound boosts electroforming quality (Ames Research), 6/3, p.67
Ultrasound vibrations boost electroforming quality (nickel coatings), 6/3, p.67

Electroluminescence:
Becomes useful light source, 3/25, p.18
Chip of crystalline converts electricity into red light, 2/18, p.20

Electrolytic: See Machining

Electron Beam:
Analyzes materials, 3/11, p.20
Automated electron beam processing system to make microcircuits, 4/8, p.73
Brazing with electron beam, unit has vacuum lock, 4/29, p.20
Electron beam measures temperature in steel plant, 2/18, p.62
Stauffer-Heraeus (Germany) market electron beam furnaces, licensing rights, 4/8, p. 27
See also Welding

Electronic Industries Assn.:
Industrial electronics sales, meeting report, 6/24, p.29

Electronics:
Electron pictures (Photomultipliers) study metal composition, 1/14, p.20
Integrated circuitry (also called microelectronics) where it pays to think small, 4/29, p.40
Work station for electronic assembly, 1/14, p.28

Electrophoresis: See Metal Deposition

Electroplating, Plating:
Bright satin nickel plating finish, Dur-Ni, 6/24, p.31
Plastic parts chrome plated, 4/8, p.18
Plating by nonelectrolytic methods in '63, 1/7, p.20
Ultrasound boosts electroforming quality (thick coatings of pure nickel, pit and pore free), 6/3, p.67

Employees:
See Communication
See Training

Employment, Unemployment:
Unemployment: How to create consumers, 6/17, p.55
Where employment is up the most (business trend), 6/3, p.97

Engineering:
Cost performance via engineering function: Where value becomes a dimension (computers), 1/7, p.131
Editorial: Play fair on (free) engineering, 3/4, p.15
Educational programs, funds, 5/6, p.18
Enrollment uptrend, survey, 3/4, p.18
Graduate work lessens engineers available to recruiters, 3/4, p.29
Median salaries, 3/11, p.66
Needed: More emphasis on graduate training, 1/28, p.98

Equipment Makers:
Sales outlook brightens, 5/6, p.125

Etching:
Defect etching machine, 2/4, p.41
Etch aids anodizing, 'Noralbryte,' 2/11, p.20
Photochemical etching, 6/24, p.31

Europe:
Common Market:
Antitrust laws (new) spelled out, 1/21, p.78
Antitrust laws checked by Kefauver, 3/11, p.29
Differences in wage costs within four industries, 4/1, p.97
Eric Johnston (management congress): U. S. not prepared for economic clash with ECM, 2/18, p.102
Scotland—disadvantages out of common market, 4/1, p.98
Continuous casting combine formed, 3/25, p.177
ECSC enters second decade, 6/24, p.120
Europeans work outside homelands, 2/25, p.101
GNP rise in '63, 1/21, p.78
Steel production drop, 1/21, p.78
Whitecollar salaries, comparisons by countries, 2/4, p.83

Expansions: See Plant Expansions

Explosives: See Forming, Bending

Exporters:
U. S. exporters can get credit aid to fit needs (chart), FCIA program outlined, 4/29, p.46

Exports, Imports: See Foreign Trade

Extrusion:
Cold extrusion pays off, 5/20, p.54
Cold forming, extruding fasteners, 5/27, p.83
Hydrostatic extrusion, wire directly from aluminum billet stock, 3/4, p.65
Prototype machine (internal roll extrusion) fabricates high strength steel-aluminum into cylindrical structures, 1/14, p.26

F

Fabrication, Assembly:
Automation speeds auto door lock assembly, 5/6, p.91

Factory Workers:
New workers worth to town (Commerce study), capital spending, 2/4, p.26

Facts & Figures:
Annual edition, 3/25, p.87

Farm Equipment:
Farmer, a champion consumer, 2/25, p.18
Knee action in tractor wheels, 1/28, p.20
Teflon plastic plow, 1/28, p.20

Fasteners, Fastening:
Chemical bonding gives locking power to Jay-Lok fastener, 5/6, p.31
Cold forming, extrusion joined to turn out fasteners, 5/27, p.83
Cold heading beryllium copper fasteners, Hubbell Inc., 6/3, p.74 and 6/24, p.71
Nylok licensing for self-locking fasteners, 1/14, p.49
Plastic fasteners hold, seal, insulate trim, 3/25, p.78
Plastic fastener (nylon expansion type), 6/3, p.70
Vibration tests at Bell labs, 6/10, p.102

Financial Analysis:
Annual steel industry (insert), 4/8, p.67

Financial:
Dividends build investor confidence, 1/28, p.19
Income (personal) wages-salaries, 3/25, p.17
Income (upper group), 6/10, p.18
Metalworking profits, 2nd quarter, 5/13, p.28
Steelmakers' 1962 earnings, 2/11, p.26
Steelmakers, 1st quarter, 5/6, p.26

Financing:
Douglas, subcontractors novel financing plan for DC-9 jets, 5/20, p.31
Nationwide Leasing, 'million dollar plan,' long term financing, 3/4, p.30

Finished Steel:
1962 mill shipments, 2/11, p.147; and first eleven months, 1/14, p.18

Finishes, Coatings, Paints:
Ablative coatings (AC-1, AC-2) resist missile heat, 6/3, p.31
Ablative plastic coatings, metal insulator, 6/3, p.73
Bright satin nickel plating finish tested, 6/24, p.31
Chromate coating (Granodine No. 92) for prepaint use on galvanized surfaces, good for coils, 6/10, p.113
Coat cold parts with cold plastic powder (French-Stafluid method), 6/3, p.31
Coatings needed to protect refractories for space vehicles, 6/3, p.70
Dip painting light fixtures at Westinghouse (trichloroethylene acrylic resin), 3/25, p.74
Electrostatic painting, automatic line, 2/4, p.41
Metal-ceramic coatings, temperature protection, 5/13, p.84
Molybdenum coated with refractory (pack cementation coat), 2/4, p.20
Nickel coated grains of aluminum gun sprayed coatings for oxidized metal, 5/13, p.33
Oxalate lube coat for stainless wire, 6/17, p.76
Paint curing oven, fuel tank lining job, 4/1, p.28
Paint deposited from water solution electrically, British firm, 5/6, p.74
Plastic fused coat to interior of steel shipping containers, 2/25, p.51
Plastisol-vinyl foam coating for metal parts, 3/11, p.63
Solder coating on electronic components, 4/8, p.58
Tungsten protective coat, special glass, TO, 6/17, p.20
Vacuum coating gives metals corrosion protection, 1/14, p.26 and TO, 6/10, p.20
See also Automotive

Finishes, Tolerances:
Don't lose profits in finishes, tolerances, 2/18, p.56

Flame Cutting:
New gas, Methylacetylene, increases cutting speeds, 4/15, p.79

Flux:
Pellet production, self-fluxing, 3/4, p.62

Foreign Aid:
AID may finance India's steel plant, 1/14, p.25
CABEI (Central American Bank for Economic Integration) joins Westinghouse for Latin American aid, 4/22, p.142
FCIA (Foreign Credit Insurance Assn.) program gives U. S. exporters credit aid, 4/29, p.46
Tax credit plan tied to foreign aid (President's plan), 4/22, p.148

Foreign Competition:
Are you ready for second cycle in Europe's expansion? (Derdian before ASTME), 5/20, p.28
Behrman (Commerce): Separation of domestic-foreign business meaningless, 3/25, p.180
Can machinery makers hold their own in world markets? 1/7, p.25
Editorial: Can you compete? 1/14, p.15
Europe's research ahead (Prof. Schmidt warns), 4/15, p.27
Soviet economic offensive, 2/18, p.51

Steel dumping (see)
Steelmakers take aim at world competition (production), 5/27, p.23
Steel users winners in competitive race (John Carroll Univ. seminar), 1/28, p.27
Westinghouse (Cresap) outlines steps in competitive challenge, 3/4, p.106

Foreign Investments:
Amertool (machine tool group) form Japanese subsidiary, 2/25, p.54
Anaconda builds in Chile, 6/24, p.33
DeVlieg forms German sales subsidiary, 1/28, p.31
Ford builds bearing plant in Puerto Rico, 3/11, p.31
Giddings & Lewis subsidiaries (Scottish and German) will market tools in North America, 3/4, p.29
Overseas Investment Handbook released by Noyes, 2/18, p.99

Foreign Markets:
Chile encourages U. S. investments, 6/24, p.33
Czech steel output, 2/25, p.101
French Fourth Plan, steel exports, 2/4, p.51
German Bundestag follows NATO, prohibits selling pipe to Russia, 3/25, p.29
India-Soviet bloc trade upped, 2/18, p.99
India: Iron-steel outlook high, 5/27, p.133
Italy, East Germany sign trade agreement, 4/29, p.87
Japan good market for U. S. machinery makers, 1/28, p.28
Japanese coking coal executives seek U. S. price cut, 2/4, p.23
Japan's Nagano (Fuji Iron) seeks closer ties between Japan-U. S. industry, 5/20, p.99
Latin America, Europe outlook (executives at Chicago World Trade Conference), 3/11, p.26
Philippines want used equipment, 1/21, p.81
South Africa welcomes U. S. manufacturers, 4/1, p.26
Switzerland, economic boom, 6/3, p.101
U. S. losing European markets (Von Kleydorff report), 2/11, p.176
West Indies (Trinidad and Tobago), good outlook, 6/3, p.101

Foreign Trade:
1963 import-export outlook (NFTC estimate), 2/4, p.49
AID report U. S. sales made overseas, 2/11, p.173
Aluminum, copper products imports, 1962, 2/25, p.77
CED asks closer ties between U. S.-Japan, 4/15, p.29
Commerce Dept. export program develops trade, 4/29, p.26
Defense contractors exports could double in 10 years, 4/1, p.23
Export business, how important? (two examples), 2/18, p.100
Export credit aid, Commerce programs (STEEL presents information chart), 4/29, p.46
Exports, BDSA predicts gains, 3/4, p.103
Exports up in 8 categories (BDSA), 3/25, p.177
Gatt countries to meet to prepare for Kennedy round of negotiations, 3/11, p.27
Ferromanganese imports threaten U. S. industry, 3/25, p.28
Imports in relation to total supplies for '61, 4/8, p.104
Manganese, chrome import quotas sought by metalmakers, 6/3, p.28
Material handling equipment exports, 6/17, p.19
Metalworkers bullish on world market opportunities, 3/11, p.25
Special equipment exports increase, 1/7, p.289
Steel imports through Western customs districts for '62, 1/28, p.54
Steel products, exports-imports of 1962, 3/18, p.120
Tariff negotiations start between U. S.-European Common Market, 2/11, p.173
Tariff protection to U. S. industries (chart), 2/25, p.102
U. S. licenses to trade with Reds granted by Commerce Dept. lag, 3/18, p.29
U. S. share of world machinery exports, 1/7, p.25
U. S.-West German trade, 3/11, p.97
World exports (chart), outlook for '63 vs '62, 1/28, p.96
World trade, route to growth and security, 3/25, p.180

Foremen:
Chart pinpoints illusive cost targets for foreman, 1/7, p.152

Forging, Forgings:
Aluminum forgings for jet airfreighter, 2/25, p.66
Beryllium copper cylinders forged (undersea telephone parts), 1/28, p.56
Die forgings, '62 record breaker, 1/28, p.93
High energy rate forging report, 5/13, p.68
Spin forging at Astro Structures, 1/21, p.35
Roll forging (Holub process), Czech auto firm at Prague (Letanys), 5/6, p.72
Switch to forgings (AISI 4130 alloy) smashes costs in no-reject production of cylinder caps for Nike missile launchers, 1/28, p.55
See also Presses

Forming, Bending:
Cold forming (Flo-Rol) precision tubing in steel and nonferrous, 1/21, p.42
Cold forming-extrusion (Raycarl) fasteners, 5/27, p.83
Cold forming puts heat on costs, (STEEL Feature) 5/20, p.49
Electrohydraulic forming machine (Scotland), 4/8, p.103
Explosive forming steel plates for hull of river cargo ship, 2/25, p.20
Explosive forming with cast steel dies, Saturn booster, TO, 6/10, p.20
HerForming machine, cold slugs, 3/4, p.20
HERF to form auto wheels, TO, 5/20, p.20
Hot vacuum forming (sheet metal parts), 4/1, p.20
Metal forming trend (B-L-H president notes), 5/27, p.17
Press brake forms without dies, 6/3, p.57
Stretch forming, auto process, 5/13, p.138

Foundries:
Arwood: Design high cost of precision cut of investment castings (design guide rules), 1/21, p.40
Bellows-Valvair: Captive shop mechanization, measured by cut of reject rate on brass castings, 2/25, p.50
European research and ours, differences, 4/8, p.22
Griffin Wheel: Automated pressure casting handling line, 3/4, p.62
Inland's new mold foundry, Indiana Harbor, 1/21, p.52
National Engineering: Sand lab, 3/11, p.35
Sealed Power: Foundry shows value of going modern, 1/28, p.45
See also Casting

Foundry Equipment Manufacturers Assn.:
Orders hit record pace, 4/15, p.29

Freedom Foundation:
Awards medal to STEEL, 2/25, p.17

Freight Car Plant:
Freight car plant may go up near Kaiser mill, 5/6, p.89

Freight Cars, Freight Rates:
Calif. tax bill exempts freight car 4% state sales and use tax, 5/6, p.89
ICC asked to reverse tin plate freight rate ruling, 2/11, p.147
Maritime Commission investigates unfair freight rates, 6/3, p.19

Fringe Benefits: See Labor

Fuel:
1980 fuel sources for electric power generation, 4/1, p.17
Commercial fuel cell near, chemical plants may be first to use, 4/1, p.20
Fuel for military, space power (mobile energy depot), 4/1, p.18
GE fuel cell operates on natural gas, 1/21, p.28
GE's hydrocarbon fuel cell, 4/29, p.28
Lift trucks powered with fuel cells, forecast, 5/20, p.20
Natural gas endorsed by Inland as openhearth fuel, 3/18, p.31
Petroleum refiners' new process yields for fuel oil, turns out petroleum pitch, 3/11, p.20

Furnaces, Ovens (Heating, Heat Treating):
Air atmosphere furnace, fast anneal at Firth Sterling, 5/13, p.74
Alloy anchors hold furnace refractory, 6/17, p.74
Car bottom furnace programed for quality, 2/18, p.69
Electrical heating system for drying ladle linings, 2/18, p.64
Electron beam furnaces for sale (joint venture), 4/8, p.27
French gantry furnace for heat treating rocket motor cases (Lindberg affiliate), 4/29, p.54
Hot sandwich oven (refractory sandwich honeycomb), TO, 5/27, p.20
Ingot preheat induction furnace conveyorized, 6/24, p.84
Paint curing oven (fuel tank lining), 4/1, p.28
See also Oxygen Furnaces
See also Vacuum Furnaces

G

Gages:
Vertical strip motion while reading coating thickness simplifies gage unit, 4/29, p.52

Galvanized Steel:
Chromate coating for prepaint use, good for coil finishing, 6/10, p.113

Gas: See Fuels

Gas Appliance Manufacturers Assn.:
Shields address: Business recovery, 4/8, p.17

Gears:
Gear surface fatigue, ARF study, 2/25, p.30
Russians make gears by hot knurling, 2/25, p.20

General Services Administration:
See Stockpiles

Germany:
Antidumping tariffs against Japan, 4/22, p.207
August Thyssen-Hutte merges Phoenix-Rheinrohr, 6/17, p.118
Consumer spending trend follows U. S. pattern, 2/4, p.83
Economic barometer for '63, 3/18, p.177
Economic boom runs out, rising taxes, wage rates threaten exports, 5/13, p.90
Demag and Yawata sign license for gas recovery system, 4/22, p.207
Erhard: European unity 'predestined' (after DeGaulle refusal to Britain into Common Market), 3/4, p.104
Export credit assistance, 1/14, p.83
Dr. Fredericks: Challenges U. S. business, 4/15, p.122
Shorter workweek brings lower production, 1/21, p.81
Pipe sales to Russia prohibited by Bundestag, 3/25, p.29
Steelmen angered by NATO (licensing tubing), 3/25, p.85
Wage increases tied to productivity, 5/13, p.145
Wage pact under new labor contract, Building Trades, 3/18, p.177

Glass:
Glass fiber rocket motor casings, 2/25, p.31
Glass fiber for tires, study, TO, 6/24, p.20
Soviet scientists have glass for constructing auto engines, TO, 6/17, p.20

Government:
AID (See Foreign Aid)
Antidumping (See Steel Dumping)
Antitrust:
GM probe, 5/27, p.125
Kefauver checks EEC's antitrust laws, 3/11, p.29
Kefauver subcommittee vacancies filled by conservatives, 4/1, p.17
Bundy: Defense contractors should double exports in next ten years, 4/1, p.23
CED asks closer ties between U. S.-Japan, 4/15, p.29
Coleman (IRS): Can our economy afford disarmanent? 4/8, p.106
Commerce (Goldy) addresses AMTDA on capital equipment, 4/15, p.27
Commerce seeks list of tariff concessions wanted by industry from other countries, 4/15, p.88
Defense budget, where spent, 1/28, p.26
FTC report on mergers, 2/18, p.28
Federal budget shows deficit, 1/21, p.26
Foreign aid funds, status, 4/8, p.18
GATT target in 1964, 3/11, p.28
Hodges: Are all imports competitive? 1/28, p.18
Hollomon (R&D proposals), 2/4, p.21
Kerr (Sen.), death, drops odds for tax cut, 1/7, p.27
Manpower report, 3/25, p.83
McNamara (see Defense Contracts)
Mills promises help on polished stainless sheets from Japan, 2/11, p.18
NLRB's impact on collective bargaining (contracting out is major issue), 4/1, p.21
NLRB ruling on GE, club for IUE talks? 4/8, p.17
NLRB: Short workweek legislation, 5/27, p.26
Silver legislation, effects, 6/3, p.28
Patents (see)
Reciprocal trading, joint ventures foreseen (NICB meeting report), 3/18, p.27
State of Union address, Congressional reaction, 1/21, p.26
Steel price increase hearings, 4/22, p.26
Steel price hearings start, Douglas Committee, 4/29, p.24
Strackbein (protectionist) calls for five year moratorium on tariff cuts, 3/11, p.27
Taft-Hartley labor - management panel revived, 6/3, p.26
Tax bill (see Taxes)
Tower (Sen.) criticizes government's role in business, 4/1, p.100
Trade Expansion Act (editorial), 6/3, p.15
Walsh-Healey, hourly wage for machine tool industry, 5/27, p.17

Graphite:
Bonding process (Japan), 1/14, p.20
Graphite cloth for ultrahigh temps., 1/14, p.38
Graphite felt used as insulation in vacuum furnace, 5/6, p.76
Heat builds strength, TO, 6/19, p.20

Gray Iron:
Barium silicide as an inoculant, TO, 4/15, p.20

Gray Iron Founders' Society:
Walton: Advances in foundry tech. in Europe, 4/8, p.22
Workman: Foundry modernization programs, 1/28, p.45
Workman: Operating rate of gray and ductile iron foundries up, 3/4, p.18

Great Britain:
Asquith (industrialist): We must barter with Reds, letter to *Times*, 3/18, p.29
"Brain drain," Ph.D.s emigrate to U. S., 5/6, p.129
Circular tinning line automatic, Glacier Metal Ltd., 1/28, p.96
Colvilles's Ravenscraig Steel Works: Gaugemeter on hot strip mill, 3/11, p.62
Harold Wilson: Nationalization of steel, 3/18, p.117
National Economic Dev. Council predict 1966 gains, 4/29, p.87

R&D spending, 6/3, p.101
RT&B: How to automate a steel plant, computers, 1/14, p.42
Steel mills since World War II, 5/27, p.24
Steel output, '63 forecast, 1/28, p.70; 2/4, p.50

Grinding, Polishing:
Coolant clarifier ends calender roll tailmarks, 6/10, p.117
Grinders in diemaking, 3/18, p.111
Heavy machining with abrasives, 4/8, p.25
Ultrasonically assisted grinding, lower costs, 4/15, p.31
Ultrasonic vibrations help grinding, 5/20, p.56

Gross National Products:
1968-70 projection, 6/17, p.27
Chicago area, GNP in '62, 1/7, p.29

Guides:
Guide to stainless steel producers, 3/18, p.104
Guide to tooling materials, 4/22, p.97

H

Hardening:
Hardening manganese steel, new process, 3/18, p.106

Harvard:
Livernash: On collective bargaining, 4/8, p.24

Heat Exchangers:
Aluminum heat exchanger beats corrosion in refinery, 3/4, p.19
Corrosion rates of resistant alloys for exchangers get test at Carpenter Steel, 4/8, p.64
Exchanger assembled for cryogenic use, 5/27, p.33

Heating Elements:
Electrical heater for drying ladle linings, 2/18, p.64
Furnace heating element from molybdenum, silicon, 1/28, p.58
Diffusion bonding, TO, 4/22, p.20

Heat Treating & Annealing:
Atmosphere controlled furnace at Firth Sterling—variety of shapes gets fast anneal, 5/13, p.74
Manganese steel hardening, new process, 3/18, p.106
Pulsating heat process for hard steel parts (based on powder metallurgy tech.), 3/18, p.31

Highways:
Federal interstate highway program, construction report, 3/4, p.27

Hoist Manufacturers Association Inc.:
Elects, B, 3/18, p.35

Honeycomb:
Aluminum honeycomb, Flex-Core, easy to form, 6/24, p.35
Brazed honeycomb goes commercial (Bridgeport Brass), 2/25, p.56
Honeycombs welded with electron beam method, 2/4, p.19
Hot sandwich oven, TO, 5/27, p.20

Housing:
Low cost homes to boom, 4/15, p.19

Hydraulics:
Electrohydraulic forming machine (Scotland), 4/8, p.103
Gar Wood, individual hydraulic motor drives, 3/4, p.20
Hydraulic press (English) operated by punch cards, 1/14, p.39

Hydrogen:
Hydrogen good fuel for commercial basis, 4/1, p.20

I

Illinois Institute of Technology:
Armour Research study: Gear surface fatigue, 2/25, p.30
Armour: Philips cites people factors in locating labs, 4/15, p.93
Reliability Center, Elgin, 5/27, p.20

Incentives:
Lincoln Electric incentive story (sales per employee), 2/11, p.33
Loyola Univ. conference addressed by Ruttenberg: Kaiser plan will teach USW productivity facts, 5/27, p.26
President's research incentive plan, 1/28, p.25 and 2/4, p.21

Income: See Financial

India:
Bakaro steel mill studied by U. S. Steel, 5/13, p.91
Electronics era, 5/13, p.146
Iron-steel outlook high, steel produced, 5/27, p.133
Machine tool production, 3/4, p.104
Machine tool needs for 1961-66, 3/25, p.178
Motor vehicle output up, 2/4, p.83
Spending for transport and communications, 3/11, p.97

Indiana University:
Aerospace Research Appliance Center formed, 1/21, p.28
State and local government taxes, 6/17, p.18
Widespread dissatisfaction: Springboard to economic improvement, 3/18, p.17

Industrial Development:
See Area Development

Industrial Diamonds:
Ireland makes synthetic diamond bort, 6/3, p.31
Japanese (Komatsu) claims new way to make diamonds, 6/3, p.31

Industrial Fasteners Institute:
Elects, B, 6/3, p.33

Industrial Production:
Industrial output pace matches record, 5/13, p.141; 5/27, p.129
Six-month forecast, Prentice-Hall, 5/13, p.17
Soviet output vs U. S., 5/20, p.17

Industrial Relations:
Goals for industrial relations executives (in company profitability), 2/18, p.26

Inserts:
Steel financial analysis, 4/8, p.67

Inspection, Testing:
Beta rays measure temperature in steel plant, 2/18, p.62
Corrosion rates of resistant alloys tested in heat transfer equipment, 4/8, p.64
Eddy current electronic detection unit ups pipe coupling quality, Magnaflux, 6/3, p.68
Eddy current valve test for Indianapolis race cars, 6/17, p.18
Electronic thermometer measures flame temperatures, steel plant, 2/18, p.64
Gaugemeter, hot strip mill (England), 3/11, p.62
Infrared detectors, diecasting equipment, 6/3, p.60
Masked microscope aids assembly of gyroscopes, 5/13, p.84
Neutron activation analysis, Kaman Aircraft, Nuclear Div., 6/10, p.103
Optical measuring, Bausch & Lomb, 5/20, p.60
Tube, bar testing, nonrotating, 6/24, p.81
Tube type thermostat accurate within 1/10° F, 1/21, p.39
Ultrasonic thermometer takes ocean's temperature, 4/15, p.18
Ultraviolet light for hot surface inspection, 1/28, p.20
Utilization Monitors and Productocorders show work performance, 5/13, p.73
See also X-Ray

Institute of Scrap Iron & Steel Inc.:
Annual convention report (look to Congress for special research funds), 1/28, p.29
Chicago elections, B, 3/18, p.35

Instruments: See Inspection, Testing

Insulation:
Graphite and carbon powders as furnace insulators are bypassed by a felt form of materials, 5/6, p.76

Insurance:
Political risk insurance to exporters, 1/21, p.27

International Copper Research Assn.:
Copper research program managed by Dr. Charles Moore (cover pic), 6/3, p.53

Inventories:
Components, 1st quarter, 2/4, p.24
Components, 2nd quarter, 5/6, p.29
Nonferrous, metal buyers, 3/4, p.27
Small steel buyers recheck inventories (strike threat), 4/29, p.23
Steel mill products, 1st quarter: Purchasers committee to inventory buildup, 3/4, p.26
Steel mill products, 2nd quarter, 6/10, p.27

Inventory Building:
Don't throw away dollars on unwieldy inventories, 2/18, p.60
GM will stockpile extra steel, 2/25, p.26
Moody's Stock Survey, inventory buildup slows, 5/27, p.17

Investment:
International report on factors of investment behavior (and economic growth), 2/4, p.52

Ireland:
Diamond makers aim at U. S. markets, 6/3, p.31
Japanese transistor radio plant, 4/15, p.121

Iron Ore:
California deposit checked (Shasta Lake), 1/28, p.72
Cleveland-Cliffs holds prices, 1/28, p.71
Inventories high may mean later shipping date, 3/18, p.29
Lake shipping gets late start, 4/15, p.98
Low grade ore processed by new Canadian method, Peace River area, 1/21, p.50
Pipeline suggested by Costantini (slurry from mine to mill), 1/28, p.30
See also Pelletizing

Italy:
Auto production in '62, 1/28, p.95
Crude steel output '62, 3/11, p.97
Machine tool output boom, 1/14, p.84
Steel consumption forecast (industries), 2/11, p.174
Wage hikes and shorter workweek, 3/4, p.104

J

Japan:
1960 GNP doubled by 1970, goal, 1/7, p.290
Aussies bow to Japan as steel price leader (Norman Hutchinson report), 1/21, p.82
Auto production forecast, 3/25, p.177
Canadian markets sought, 6/3, p.101
CED asks closer ties, U. S.-Japan, 4/15, p.29
Chugai Ro Kogyo Kaisha: Simple signal method boosts productivity, 4/29, p.50
Coking coal purchasing executives in U. S. seeking price cut, 2/4, p.23; 2/25, p.101
Commerce Dept. trade mission: Japan excellent market for machine tools, 1/14, p.25
Computer controls reversing billet mill (Sanyo), 3/11, p.58
Daido Steel: Mill has one planetary roll, lower costs, 1/14, p.46
Export-imports in '62, 3/11, p.97
Fuji and Yawata exchange of presidents, 6/10, p.33
Fuji Iron & Steel (Nagano) seeks closer ties between Japan-U. S., 5/20, p.99
Fuji Iron & Steel unveils automated Hirohata Works, 6/10, p.169
Hitachi protests Defense favoring Allis-Chalmers turbine contract, 5/13, p.92
Hondo Motor: Oriental maverick shows heels to competitors, 1/28, p.50
Industrial production outlook, 2/4, p.83
Japan Iron & Steel Federation, general assembly president, 6/24, p.120
Kokan's Kawasaki plant: L-D furnaces with computer, 4/8, p.23
Kokan steel bridge-prefab, bolted in 10 hours, 5/6, p.129
Kokan tin temper mill (built by Bliss), 4/8, p.28
Komatsu Diamond Mfg., new way to make diamonds, 6/3, p.31
Labor force growing, 5/13, p.145
LP-gas substitute for auto gas, 6/24, p.119
Parking wheel, 4/8, p.103
Pipe contracts, Venezuela and Brazil, 3/11, p.98
Pipe order to Russia cancelled by NATO request, 3/4, p.104
Red China must pay cash for future purchases, 2/11, p.173
Sony venture in Ireland (transistor radios), 4/15, p.121
Standard of living equals Italy, 4/1, p.97
Steel dumping welded standard steel pipe, U. S. Steel charges, 1/7, p.28; 4/1, p.24
Steel output forecast '63, 3/11, p.98
Steel prepares for new surge, 5/20, p.29
Steel profits drop, 6/10, p.170
Telecasts Olympic games (giant antenna) worldwide, 5/20, p.100
Toyo Bearing sells to U. S., 2/18, p.100
Toyo Kogyo: Carmaker automates production control system, 6/10, p.100
U. S. machinery makers find Japan good market, 1/28, p.28
Wages, report counters cheap labor image, 1/14, p.83
Yawata: L-D converter gas recovery process, 1/7, p.166

Jewel Bearing Plant:
President ok's Rolla, N. Dak., plant, 6/3, p.19

Jigs, Fixtures:
Centrifugal force for gripping solves chatter problem in brake drum boring, 4/1, p.43
Nesting blocks-universal clamps secure work, 3/18, p.111

Job Shops:
Higgins (Worcester Pressed Steel): How job shops should buy capital equipment, 4/1, p.44
Japanese firm uses signal system cuts production time, 4/29, p.50

Jobs:
Creating jobs, consumers, 6/17, p.55
Editorial: Jobs—Our Jobs (creating), 6/17, p.15

K

Kaiser Progress Sharing:
See Labor-Management

L

L-D Gas Recovery:
See Steelmaking (Oxygen)

Labor:
AFL-CIO: Beirne named compromise candidate to replace Meany, 1/28, p.19
Agency shop, only states can ban, 6/10, p.17
Bargaining breakdowns, public reaction, 1/28, p.17
Bargaining pressures in '63 mount warn Wirtz and Meany, 2/25, p.27
Boeing strike deadline (IAM and UAW), union shop issue, 1/14, p.23
Boeing refuses advisory panel recommendation, 1/21, p.25
Collective bargaining, NLRB impact, 4/1, p.21
Collective bargaining never easy (Ford's Denise), 4/1, p.100
Collective bargaining (Livernash views), 4/8, p.24
Contract language (watch clauses), it can save your business, 6/3, p.61
Fringe benefits, the case for being articulate, costs, list of benefits, 6/3, p.58
IAM: Hayes raps foes of collective bargaining, 4/22, p.28
IUE: NLRB ruling vs GE, 4/8, p.17
IUE-GE subcommittees study, 5/13, p.25
Kaiser workers briefed for progress sharing vote, 1/7, p.27
Labor contracts, how long should they run? 2/4, p.47

NLRB awards back pay (employees 'illegally fired' in union activity, 2/18, p. 19
Short workweek philosophy attacked by Kennedy, 4/1, p.22
Short workweek legislation, hearings planned, 5/27, p.26
Short workweek, method of creating jobs? 6/17, p.62
Strikes abroad supported by U. S. unions, 3/4, p.104
Strikes in Congo trouble nonferrous metalworkers, 1/14, p.24
UAW: Ford and GM agree to meet, 4/22, p.17
UAW-auto companies shoot for early labor pact (targets), 6/10, p.161
UAW: Dues paying members, total net worth, fund balances, 6/10, p.161
UAW-GM agency shop pact, Indiana plants, 6/24, p.112
UAW-Reuther speaks at Detroit Economic Club, 2/11, p.27
UAW-Reuther seeks joint study groups for auto industry, 4/1, p.23; automakers views, 4/8, p.24
UAW: Reuther points problem of untrainables, 5/27, p.18
UAW (Woodcock): Handling gigantic power of some corporations, 2/4, p. 17
USW pamphlet "Shorter Work Week", 1/28, p.18
USW: HRC sessions underway (Has steel industry bargaining really started?), 1/21, p.23
USW: Job security is key topic, 2/18, p.25
USW-McDonald hints short week not an issue, 2/4, p.23
USW (Miller) challenges STEEL's point in Kaiser plan report, 1/28, p.27
USW: Industrial relations exec briefed on Kaiser plan, 2/18, p.25
USW-Ruttenberg (former official) views Kaiser plan, 2/18, p.26 and 5/27, p.26
USW contract seen by Apr., 2/25, p.27 and p.28
USW: Optimism for peaceful contract settlement, 3/25, p.25
USW: Will Kaiser bonus spur union demands? 5/6, p.25
USW: Steelmakers continue HRC talks toward contract, 5/20, p.26
USW-steelmakers close in on contract; union may trade extended vacation for one year contract extension, 6/3, p.25
USW-labor committee approach passed good test, Pittsburgh-Des Moines Steel, 6/24, p.27
USW: Steelmakers continue HRC policy committee meet, 6/17, p.17
USW: Vacation plan, could it work for all firms, employees? 6/24, p.28
Walsh-Healey minimum set for three industries, 1/14, p.23
West Coast proposal: Workers choose earnings-benefits split (cafeteria style), 3/11, p.31

Labor Costs:
AISI: Hourly employment costs, 1940 to 1961, and profit squeeze, 2/25, p.17
Hourly employment costs and unit labor costs (E-R-N), 4/1, p.22

Labor-Management:
Advisory panels fail, union leaders charge, 1/21, p.24
Henning (Labor undersec'y): Push is on for more job guarantee clauses, 3/11, p.100
Human Relations Committee members, steel negotiations, 1/21, p.24
HRC acts on stockpiling, 2/11, p.17
HRC reports, 2/25, p.27
HRC studies NLRB rulings (contracting out, plant shutdowns, job eliminations), 4/1, p.21
HRC: McDonald briefs his committee, 5/13, p.25
HRC: McDonald reports, 5/20, p.26
Industrial relations executives surveyed, 2/4, p.47
Kaiser booklet released on progress sharing (details listed), 1/14, p.23
Kaiser plan, opposition from incentive group employees, 1/21, p.24 (STEEL's report challenged by USW), 1/28, p.27
Kaiser plan, steel executives get briefing, 2/28, p.25
Kaiser progress sharing, will bonus affect labor talks? 5/6, p.25
Kaiser plan will teach USW productivity facts (Ruttenberg addresses incentive conference), 5/27, p.26
More labor-management committees on the way? The 'new look' in labor relations approach studied by groups, 5/13, p.25
T-H labor-management panel revived by Kennedy, 6/3, p.26
Wirtz suggests labor court (Baruch's proposal), 2/25, p.27

Labor Shortages:
Dr. Lawson: Europeans' efficiency and labor shortages, 1/14, p.86

Laboratories: See Research & Development

Lake Port:
Burns Ditch deepwater port, Lake Michigan, gets setback, 2/4, p.18

Laminar Flow (LFC):
Northrop LFC for cutting airplane wings, reduces air friction, 6/10, p.98

Languages:
One language needs cited for use with underdeveloped nations, 2/18, p.20

Lasers:
Airco develops continuous wave laser, 9 watts-power, 5/13, p.88
Ford studies combustion with lasers, 4/29, p.18
GE-solid state units, laser based on gallium arsenide, 1/28, p.20
GE predicts cutting with laser, seeks crystal, 6/24, p.20
Green laser for underwater military needs, 2/18, p.17
Helium-neon laser measures distances between atoms, 4/8, p.20
Laser range finder measures distances (Colidar Mark II), space use, 4/15, p.87
Magnetic tech. for tuning, pulsing, RCA, TO, 6/3, p.20
Plastic laser, RCA, 3/18, p.20
Plastic based laser uses europium (Princeton lab), 3/25, p.76
Powerful beam of light (fireworks) pierce piece of steel, 4/1, p.20
RCA tube unscrambles hundreds of TV channels, (Lasecon), 4/1, p.18
Satellite to use lasser-reflector system, 6/10, p.103
Spectrograph uses optical ruby laser for tests, 4/29, p.20
Sperry ups laser efficiency (pumped by gallium arsenide diodes), 2/18, p.20
Raytheon, most powerful laser, 2/4, p.20
Researchers speak on practicability of laser machine, 4/8, p.71
Watchmakers use, balance wheel, TO, 6/17, p.20
Weld metals with a laser, 3/4, p.20

Latin America:
Machine tool industry expands, 4/22, p.207
Tax incentive lures, 4/22, p.207

Lead:
Lead refiners suffer from limited imports, 3/18, p.29
Lead-zinc problem: How to glamorize a work horse, status of lead-zinc research program, 5/6, p.28

Leasing:
1962 leasing (industries), tax incentive impetus, 1/14, p.19
Brown & Sharpe machine tool leasing, purchase option, 2/4, p. 53
Europe: Renting or leasing boom for consumer goods, 4/1, p.97
Nationwide Leasing sets up 'million dollar plan', 3/4, p.30

Licensing:
A patent attorney looks at licensing, 1/14, p.52
Electrophoretic deposition for coating steel with aluminum, licensee firms, 1/28, p.20
Licenses to trade with Red Bloc granted by Commerce in 1959-'62, 3/18, p.29
Nylok Corp.: Licensing can be profitable, 1/14, p.49

Lighting:
Mercury vapor lighting, Rockwell plant, 5/27, p.94
See also Electroluminescence

Logistics Management Institute:
Weighted guidelines proposed to determine profits for negotiated defense contracts, 2/25, p.25

Lubricants, Lubrication:
Aluminum lubricants revealed by GE lab, 1/28, p.30
Coolant clarifier ends calender roll tailmarks, 6/10, p.117
Cutting fluids employed in chem machining sold as fertilizer, 1/28, p.20 and 2/4, p.20
Cutting fluid (multipurpose), sulfurized mineral lard, 2/4, p.40
Dry lube, Tungsten diselenide, for space tests, 6/3, p.60
Glass powder additives, strong lubricating film for cutting tools, 5/13, p.20
Hydrostatic bearing uses viscosity lube, 5/20, p.71
Paste, lubricant for hot extrusion, TO, 6/10, p.20
Porous chromium plate holds plastic lubricant (Vanderlube), 4/1, p.52
Resin bonded dry film lubricants for Army vehicles, 2/11, p.20

M

Machine Tool Industry:
AMTDA business forecast (meeting), 4/15, p.26
ASTME tool exposition, highlights of conference, 4/22, p.137
Automakers quality capability studies, 5/13, p.137
Bausch & Lomb gets ready for optical measuring, 5/20, p.60
Brown & Sharpe leasing plan with purchase option, 2/4, p.53
CIP (cost improvement program) saves millions in tooling, setup, 1/21, p.36
C.O.S.T. (co-ordination of spindle-type tooling), marketing program for Scully-Jones salesmen, 4/8, p.60
Foreign imports, exports, 1/28, p.95
GE manufacturing men air equipment needs, 5/20, p.69
GE-Myerholtz addresses NMTBA on a system approach, 5/27, p.81
Gidding & Lewis to sell its foreign built tools here, 3/4, p.29
Giddings & Lewis 'instant' delivery (market-anticipation program), 4/8, p.25
Kearney & Trecker Cash-Flo payment plan, 3/4, p.106
Machine tool orders surge, 4/1, p.93
NMTBA meeting, outsiders asked to comment on industry future, 5/6, p.28
NMTBA to fight wage rule (Walsh-Healey), 5/27, p.17
U. S. Commerce trade mission notes Japanese market good for tools, 1/14, p.25
Westinghouse Forum, speakers, 6/17, p.18

Machine Tools & Attachments:
Heald interchangeable workholding fixtures and spindle plates, 2/4, p.41
Heald Bore-Matic has gun drill, 2/11, p. 92
Lathes rebuilt for hydraulic tracer control, 2/11, p.92
Low cost horizontal milling machine, 2/18, p.28
Monarch lathe used by 'farmer turned entrepreneur,' 2/25, p.32
Optical measuring systems on machine tools and gaging equipment, 5/20, p.60
Postprocessors (programers) speed tape contouring, 1/14, p.40
Vertical mill in small machining jobs, 1/21, p.48

Machinery & Allied Products Institute:
Terborgh: Tax incentives boost earning power of investment dollar, 1/7, p.154

Machinery Dealers' National Association:
Chicago meeting: Used machinery sales report, 5/27, p.27
Elects, B, 6/17, p.35

Machining:
'Ballizing,' hole finishing process, 4/8, p.59
Buhr dial machine processes four cast iron manifolds for GM engines, 2/18, p.59
Chatter studied by AF, 4/8, p.27
Chatter and vibration in machine boring-turning ended with unit, 5/13, p.73
Climb milling, TO, 5/20, p.20
Electrolytic machining equipment, Anocut debut, 2/11, p.17
Electrolytic lathe (pic) machines forgings, 3/25, p.33
Finishes, tolerances tied to production costs, 2/18, p.56
Heavy duty machining with abrasives, 4/8, p.26
Piggyback cutting tool (Chinese) does hot machining, TO, 5/13, p.20
Shear spinning operations, 1/21, p.34
Short run machining savings (automatic, tape control), 2/18, p.58
Short run problems solved with tooling-preset and quick change (Insta-Set) system, 6/24, p.72

Magnesium:
Magnesium bowling pins, 3/18, p.17

Magnesium Assn.:
Elects, B, 6/17, p.35

Magnets:
MHD generators with superconducting magnet, 1/14, p.17
Permanent magnet with memory and on-off feature, 2/18, p.66
Permanent magnets improved with casting tech., 4/8, p.20
Small (19 lb) superconducting magnet, 5/20, p.70

Maintenance:
Broader maintenance skills needed with advanced equipment reports GE-Clover, 6/17, p.84

Maintenance Show:
See Plant Engineering & Maintenance

Malleable Founders Society:
Elects, B, 6/17, p.35
Malleable castings sales, '63 forecast, 6/17, p.17

Management:
Cites need for better manpower management (Rosow at Chicago conference), 4/1, p.25
How to counter employee resistance to change (Dr. Laitin), 3/11, p.29
How to organize to exploit big new markets, 3/4, p.49
Industrial relations (personnel) performance gaged to company profits, 2/18, p.26
International management, Manila conference speakers, 1/7, p.289
Manager with specialty most in demand, 4/22, p.27
Managers for the big new markets, new breed, 3/18, p.95
Manager's role spells computer success, 4/22, p.31
Personnel's changing role spelled out at conference, 2/4, p.25
Profile of metalworking presidents (statistical chart), 1/28, p.61
Supervisors unfit for jobs (Maintenance Show speaker), 2/11, p.112
TV 'performers' urged by Hagerty, ABC, 2/4, p.86
What metalworking managers expect (survey): Problems getting top priority, 6/17, p.25

Management (Council for International Progress):
Eric Johnson: U. S. not ready for economic clash with Common Market, 2/18, p.102

Management Systems:
Automated Operations Control (Northrop shop transactions), 4/15, p.20
Cost Improvement Program (Hughes Aircraft), 1/21, p.36
C.O.S.T. (coordination of spindle-type tooling) at Scully-Jones, 4/8, p.60
EDP used in purchasing, 4/29, p.49
How to automate a steel plant, England (RT&B): Management

organization chart-computer system, 1/14, p.42
CPM, PERT, cost and timesaving tools, 1/7, p.131
PERT for marketing problems, 1/7, p.158
Postprocessor (programing) speeds tape contouring, 1/14, p.40
Systems Engineering, one route to better quality: Feigenbaum speaks at ASQC, 6/3, p.29
Systems concept worked in computer installation, Sara Lee Kitchens, 6/17, p.28

Manganese:
Hardening manganese steel, new process, 3/18, p.106
Manganese import quotas sought by metal producers, 6/3, p.28

Manpower:
1st annual manpower report of the President (apprenticeship programs inadequate for tool-die makers), 3/25, p.83
Calif. retraining programs, 4/15, p.92
Fluid power manpower shortage, survey, 6/17, p.29
NASA charged by Sen. Bennett with hiring coercion, 5/20, p.18; reply Smith (NASA recruiter), 6/3, p.18
Rosow (Standard Oil): Cites need for better manpower management, 4/1, p.24
SRI study: Machines plus teacher, good retraining, 5/6, p.93
Wheeling Steel's chief stresses manpower needs at AISI meeting, 5/27, p.24

Marketing:
AMA speaker: Coordinate new products programs, how to organize, 4/22, p.29
Analysis of small account and small order problem, 1/7, p.161
Clothes dryers: Industrywide promotion campaign, 2/4, p.47
C.O.S.T. marketing system for toolmaker (Scully-Jones), 4/8, p.60
Don't spill profits getting to market, 1/7, p.157
Glynn (Howard Monk Associates): Pretesting programs prevent marketing flops, 4/15, p.124
Organization strategy foundation for attack on big new markets, 3/4, p.49
PERT for marketing problems, 1/7, p.158
Quality assurance service sharpens competitive edge (reliability IDQA), Standard Pressed Steel, 1/28, p.53
Selling the new markets, editorial, 1/28, p.15
Stainless steel firms face selling task, 4/22, p.29

Markets (Big, new markets of '60s):
See STEEL Features

Marking:
Tagging system key to savings, 1/28, p.49

Massachusetts Institute of Technology:
Concept of computer - engineer, man - machine designing team, 6/24, p.70

Material Handling Industry:
The neglected cost of material handling (feature story), 2/11, p.85
1963 sales forecast, 6/10, p.18
Exports of material handling equipment, 6/17, p.19
Industrial trucks, foreign competition, service and maintenance problems, 6/24, p.119

Conveyors:
Pressure casting line automated (steel wheels), 3/4, p.62

Cranes, Hoists:
Overhead cranes equipped to weigh steel in unloading process, 1/14, p.27
Stacker crane (Wean Mfg.) works storage area, 1/21, p.39

Pallets:
Load 'floats' into trailer van (Load Glide Air-In-Floor), 3/25, p.81

(Robots)
Robot hands reach conventional jobs at Unimation Inc., 2/25, p.48

Trucks, Gas & Electric:
Stick drive on Omni-Drive, 1/28, p.88

Material Handling Institute:
Chicago-Midwest Show, optimism rampant, 6/10, p.28

Materials Report:
Alloy (Hastelloy) anchors hold furnace refractory, 6/17, p.74
Alloy plus stainless gives composite saving (bar), propeller shaft for outboard motor, 5/27, p.86
Basic materials facts reviewed by scientists at Boston seminar, 1/28, p.58
Brazed honeycomb goes commercial (Bridgeport Brass), 2/25, p.56
CF&I activates parallel wide flange beam mill, 2/18, p.62
Charging machine cuts open hearth load cycle, 2/4, p.44
Cheap way to recover L-D converter gas, 1/7, p.166
Coal injection system moves fuel by air (B&W), 3/4, p.60
Computers cut steel costs, market for 4000 units, 2/11, p.98
Continuous steelmaking bit closer (Australia's Dr. Worner's views), 6/3, p.84
Designers push for new materials, 5/13, p.63
Higher iron rates with pellet use tallied, 1/21, p.44
Metal foams produced with refractory methods, 5/20, p.65
Molybdenum silicide heating element, 1/28, p.58
New forms of carbon improve insulation, 5/6, p.76
New blooming mill levels steel capacity (Atlantic Steel), 3/11, p.60
New mill (combination slabbing and plate) eases pressure at Houston steel plant (Sheffield), 6/24, p.74
New process hardens manganese steel, 3/18, p.106
New stainless (Checkwate 8) used for standard weights, 4/22, p.140
Nippon planetary mill has one planetary roll for lower cost, 1/14, p.46
Plastic based laser uses europium (Princeton lab), 3/25, p.76
Porous chromium plate holds plastic lubricant, 4/1, p.52
Rotor furnace, ways to hike output, 4/15, p.74
Test tightens measure of corrosion rates, 4/8, p.64
USS blast furnace has third bell, Duquesne, 6/10, p.104
Variety of shapes gets fast anneal (Firth Sterling atmosphere controlled furnace), 5/13, p.74
Vertical strip motion simplifies gage unit, 4/29, p.52

Mergers:
Metalworking mergers in '62, FTC report based on Moody and Standard & Poor, 2/18, p.28

Metal Cleaning, Finishing:
Glass bead peening cleans metal parts, 6/10, p.109
Unit cleans and machines metal parts simultaneously, 2/4, p.20

Metal Deposition:
Aluminum on steel (electrophoretic process) dev. by BISRA, licensees listed, 1/28, p.20

Metal Fibers:
Designers push materials, new technological changes, 5/13, p.63
Melted fiber in form of bonded product (Feltmetal) like felt or paper, 2/11, p.98
Research shows heat resistance of metal fiber structure (cover), 5/13, p.62

Metal Foams:
Metal foams produced with refractory methods, 5/20, p.65

Metallurgy:
Electronic 'picture' studies metal composition, 1/14, p.20
High temperature oxidation, TO, 6/24, p.20
Metal fatigue failure signalled by noise, researchers report, 5/20, p.31
Metal structures studied hot in miniature vacuum furnace, 4/1, p.52
Micrograph analysis with computer, 1/28, p.54
Ultraviolet light for inspection of hot materials, 1/28, p.20

Metalworking:
2 in 3 plants gone five years hence (productivity measurement), 1/28, p.98
4 pennies from each cost dollar add 40c to profit dollar, 1/7, p.129
Big new markets of sixties (See STEEL Features)
Companies fastest growing (chart), all new market seekers, 2/4, p.32
1962 earnings, profits (dollar level improved) chart, 2/25, p.99
1962 earnings vs '61, (Nat'l Bk. of N. Y.), 3/25, p.17
1963 equipment buying (presidents surveyed), 1/14, p.21
1963 orders—show of strength hikes optimism, 3/4, p.25
1963-2nd quarter profits (chart), 5/13, p.28
Sales at record high, employment up, 6/17, p.113
Metalworkers bullish on world market opportunities, 3/11, p.25
Metal producers seek quotas on manganese, chrome imports, 6/3, p.28
Organizing to exploit big, new markets, 3/4, p.49
Presidential profiles (statistical chart), 1/28, p.61
Price fixing indictments by N. Y. grand jury (firms), 4/8, p.24
What metalworkers expect (semiannual survey): Problems getting top priority 6/17, p.25
What metalworking managers expect in 2nd half, 6/24, p.63

Metric System:
ASTM adds metric data to publications to remove barrier to U. S. foreign trade, 3/11, p.31

Mexico:
Fresh water plant, distillation system, 3/18, p.19
Profit sharing law, 1/28, p.95

Midwest Research Institute:
Space technological ideas, 5/20, p.59

Milwaukee Association of Commerce:
Survey—firms see sales gains in '63, 3/11, p.93

Missiles & Rockets:
See Space Technology

Motion Pictures:
Color film, "Magnetic field spark chamber studies" Argonne Nat'l Lab, Switzerland, 4/29, p.107

N

National Aeronautics & Space Adm.
Ames Research Center: Ultrasound boosts electroforming quality (nickel coatings), 6/3, p.67
Antenna to link earth with SYNCOM satellite, 2/4, p.53
Award to Rohr for antenna system, Calif., 3/11, p.68
Coatings needed to protect refractories (space vehicles), 6/3, p.70
Fact book, computer compiled, for parts list, Huntsville, Ala., 3/4, p.72
Fong: Wanted—more industry use of space-generated ideas, 5/20, p.59
Ideas sought for experiments on life support systems, 6/10, p.31
Laser beam-reflector system for satellite, 6/10, p.103
Manpower raid (hiring practices coercion) charged by Sen. Bennett, 5/20, p.18; Smith (NASA) replies, 6/3, p.18
Dr. Silverstein (Lewis Research): Reliability in space effort our biggest problem, 4/8, p.106
Simpson named to technological post, 4/1, p.24
To study need for practical satellites, 4/1, p.61

National Association of Corrosion Engineers:
Fiberglas reinforced plastic market forecast, 4/8, p.73

National Association of Purchasing Agents:
Atlantic City convention speakers announced, 2/18, p.35
Conference speaker (Gainsbrugh): Why business will stay high in '63, 6/10, p.25
Conference speaker (Weikel): Invites research projects, 6/10, p.27
Evaluation of Supplier Performance, booklet, 4/8, p.68
How PAs see price trends shaping up for rest of '63, 6/10, p.26

National Bureau of Standards:
Computer speeds micrograph analysis, 1/28, p.54

National Fluid Power Assn.:
Spring meeting, elects Maha president, 5/13, p.33

National Foreign Trade Council:
Elects president, B, 1/7, p.35
Elects, B, 3/18, p.35

National Industrial Conference Board:
Dividends build investor confidence, 1/28, p.19
Elects Palmer president, 1/7, p.35
Firms set up formalized capital spending programs, 4/1, p.24
Gainsbrugh at NAPA: Consumer and government buying keeps business high through '63, 6/10, p.25
Meeting: Crackdowns foreseen on reciprocity, joint ventures, 3/18, p.27
Meeting: Presidents panel predicts uptrends in three major markets, 3/25, p.26
Meeting: Reappraisal of 'soaring sixties,' 5/20, p.25
Pretax profits—1st half predicted, 1/7, p.18
Upper income market increased, 6/10, p.18

National Machine Tool Builders Assn.:
Ask for permanent R&D group, 3/11, p.67
Builders ask 'outsiders'—what's in the future for the industry?,' Diebold Group Inc. answers, 5/6, p.28
GE manufacturing men air equipment needs, 5/20, p.69
GE-Myerholtz address: System approach urged, 5/27, p.81
Walsh-Healey wage ruling challenged, 5/27, p.17

National Metal Trades Assn.:
Predict steel settlement by Apr., 2/25, p.28
Survey of industrial relations executives: How long should a labor contract run, 2/4, p.47

National Science Foundation:
Government R&D spending in '63, survey, 1/7, p.29

Navy:
Oceanography program, 5/27, p.77
Titanium for submarines? 6/17, p.79

New Markets: See STEEL Features

New York University:
Drucker: Attacks nonselective use of computers, 3/18, p.180

New Zealand:
Hydroelectric facility, glaciers power, 5/13, p.145

Nitrogen:
Forecasts plants for sole purpose of producing cheap nitrogen (cooling purposes), 5/6, p.20

Nodular Iron:
Chevrolet to use more nodular iron, 3/18, p.169

Noise:
Researchers say noise signals metal failure, 5/20, p.31

Nonferrous:
1963 steady prices predicted, 3/25, p.29
Aluminum, copper producers predict '63 sales, 1/7, p.31
Aluminum, copper, two forecasts for Free World supply-consumption, 5/6, p.93
Inventory buildup, 3/4, p.27
Lead, zinc shipments, 1/7, p.31
Lead price hike, 1/21, p.67
Lead, zinc use heavier with automotive, 5/6, p.115
Manganese, chrome import quotas sought by metal producers, 6/3, p.28
Silver price heads toward $1.29 ceiling, 1/21, p.26
Silver legislation, effects, 6/3, p.28
Strikes, Congo brings problems to nonferrous industry, 1/14, p.24

Northwestern University:
Computer and Information Sciences symposium, 6/24, p.30

Nuclear Power: See Atomic Energy

Numerical Controls:
ADAPT system for numerical control, 4/1, p.20
AMTDA and NMTBA sponsor NC course for managers, 1/28, p.56
ASTME interest high, 5/13, p.89
NUCOM, new system employs mechanical and pneumatic rather than electronic elements, TO, 5/13, p.20
Postprocessor (Gecent) speeds tape contouring, 1/14, p.40
Preparation of tapes now done by machinists, 4/15, p.33
Punched cards will operate English press and manipulator, 1/14, p.39
Tape guided turret press, Cutler-Hammer's new numerical control positioning system, 3/4, p.57

O

Ocean:
Navy oceanographic program, 5/27, p.77
Ultrasonic thermometer pinpoints ocean temperatures, 4/15, p.18

Office of Emergency Planning: See Stockpiles

Open Hearths: See Steelmaking

Optical Measuring: See Inspection

Order Processing:
Automated process speeds Bethlehem order entry, 4/8, p.63
Customer service dept. fills small orders at Aluminum Extrusions, 3/11, p.65
Standard Pressed Steel data processing system, 2/18, p.60
Warehouse handles order a minute (Colgate-Palmolive, Ind. plant), 3/25, p.72

Oriental Maverick: See Japan

Organization for Economic Cooperation & Development:
Factors of investment behavior and rates of economic growth, 2/4, p.51

Organizing: See Management

Outboard Motors:
Alloy plus stainless (two steels in one bar) for propeller shaft, 5/27, p.86

Overseas: See Foreign

Oxygen Furnaces:
Allegheny Ludlum adds two, 2/25, p.31
Nippon Kokan L-D computer control, 4/8, p.23
Pittsburgh Steel contracts, 4/29, p.30
Republic Steel to install six basic oxygen furnaces, 4/1, p.27

Oxygen Processes: See Steelmaking

P

Packaging, Containers:
AMA packaging conference: Metals or composites? 4/29, p.25
Bill requires marking containers with country of origin if made of foreign steel, 2/25, p.18
ECM markets for U. S. packaging equipment, 6/10, p.29
Plastic fused to interior of steel shipping containers, 2/25, p.51

Patents:
A patent attorney looks at licensing, 1/14, p.52
AEC releases patents for public use, 1/14, p.20
East Germans offer patents for sales to West, some are suspicious, 4/29, p.87
Employee inventor patent rights, bill introduced, 4/22, p.142
Liberalization of government patent regulations in line with Defense Dept. policy expected, 1/28, p.56
Nylok fastener patents, 1/14, p.49
Safety device prevents explosions in oil or gas containers, 4/29, p.20

Peening:
Glass bead peening, metal parts, 6/10, p.109

Pellets:
Aluminum pellets to sheet in one step (Reynolds), cover story, 4/1, p.39
Higher iron rates with pellet use tallied, 1/21, p.44
Low grade ore processed by new Canadian method, 1/21, p.50

Pensions:
Assets and reserves of private welfare and pension plans, 4/1, p.23
Rising cost of employee pension, welfare funds, social security, (1930-'62), 1/21, p.19

Personnel & Executive Conference:
Michelon (Republic) speaker: Personnel's changing role, 2/4, p.25

Philippine Islands:
Chromite deposit uncovered by AID, 6/17, p.118

Photography:
Plastic logic components formed photographically, 1/21, p.46

Pipelines:
Iron ore slurry pipeline from mine to mill (Costantini suggests), 1/28, p.30
Material pipeline contract award, 1/21, p.57
Welding transition pipes to pipeline valve in shop instead of in the field, 3/4, p.72

Pipe, Tubing, Fittings:
Pipe coupling quality upped by eddy current unit, (electronic detection), 6/3, p.68
Plastic coated steel tubing for gas connections, 3/25, p.80
Precision tubing cold formed (Flo-Rol) in steel and nonferrous metals, 1/21, p.42
Smooth finish for stainless steel tubing, 3/18, p.108

Plant Design:
Efficient layout increases assembly (Tuttle & Bailey), 4/8, p.69
Future plants, men and machines separation, 2/4, p.42

Plant Engineering & Maintenance:
Chicago Show provides tips for upgrading plant maintenance function, 2/4, p.26
Conference speaker (McCarthy): Picking supervisors, weed out unfit, 2/11, p.112

Plant Expansions & Developments:
Amax '63 plans for capital expenditures, 1/28, p.31
Armco slab-plate mill, Houston, 6/10, p.33
Austin plant, new automatic tools, 3/11, p.69
Bethlehem awards contracts for Burns Harbor facilities, 5/20, p.33
Budd Co. expansion $15 million, Automotive Div., 3/11, p.31
GM capital spending, home and abroad, 2/25, p.26
Kennecott Copper, $100 million, 2/25, p.30
Latrobe begins $14 million expansion, 3/11, p.33
Republic facilities improvement, 5/20, p.33
Steel firms plan facilities improvements, 1/7, p.33
Youngstown Sheet & Tube, Chicago area plants, 3/11, p.68
Youngstown Sheet & Tube plans 80 in. sheet mill, Indiana Harbor, 6/3, p.26

Plant Security:
Ultrasonic burglar alarm, 2/4, p.20

Plasma Torch:
Czech arc plasma torch runs on water, 3/4, p.20
Czechs laud plasma cutting, 6/17, p.82
French plasma generator produces high temperatures, 3/4, p.20
Plasma beam, hotter than sun, 5/20, p.31

Plastics:
Ablative coatings resist missile heat, 6/3, p.31
Ablative plastic makes better insulator coating, 6/3, p.73
Aromatic polyimides resist heat, TO, 6/17, p.20
Chrome plated plastic parts, 4/8, p.18
Copper clad laminated plastic can be punched (RCA printed wiring boards), 4/1, p.52
Design engineers, plastics usage, 2/11, p.29
Encapsulation materials (plastic jackets), Nalcon, 6/24, p.32
Fiberglas reinforced plastic (GRP), report, 2/11, p.29
Fiberglas reinforced plastic market, '68 forecast, 4/8, p.73
French (Stafluid) method coats cold parts with cold plastic powder, 6/3, p.31
Loctite sealant (liquid plastic) for bearing shafts, 1/28, p.48
Nails coated with polymer (liquid epoxy glue), 3/18, p.20
Plastic armor developed at Aerojet, (AGC Type II), 4/8, p.26
Plastic coated steel tubing in coils, 3/25, p.80
Plastic-corrosion protection for metal edges, TO, 6/10, p.20
Plastic fasteners hold, seal, and insulate trim, 3/25, p.78
Plastic foams make good patterns for castings, 4/1, p.20
Plastic injection molds, large parts, 5/27, p.94
Plastic lubricant for porous chromium plate, 4/1, p.52
Plastic for petroleum tank bottoms, 2/11, p.20
Plastic lasers, 3/25, p.76
Polymer SP resists 1000° F, TO, 5/6, p.20
Railroad tank car shell, Poxyglas, 4/15, p.35
Reinforced plastic shell for transformer housing, 3/11, p.62
Steel shipping containers, lined with seamless plastic, TO, 5/6, p.20
Steel shipping containers, plastic fused on interiors, 2/25, p.51
Teflon farm plow, 1/28, p.20
Thermoplastic impact strength test resembles metals, 3/11, p.20
Thermoplastic laminate called 'Expanded Royalite' developed by U. S. Rubber (auto and truck uses), 5/20, p.55
Urethane (ElastaCast) plastic aids rubber pad forming, 4/22, p.139
Vinyl foam coating protects metal parts (Unichrome Plastisol 4417), 3/11, p.63
See also Automotive

Plate Mills:
Armco's slab-plate mill, Houston, 6/10, p.33

Plating: See Electroplating, Plating

Politics:
Purdue study: Businessmen set opinions on political matters, 2/4, p.48

Powder Metallurgy:
1963 conference and show, exhibits, 5/6, p.31
Czechs follow U. S. in powder metal growth, 1/7, p.168
Foams of metal and refractories, process, 5/20, p.65
High density alloys, 1/7, p.168
Monsanto enters copper powder field (hydrometallurgical refining process), 6/10, p.124

Power Sources:
Listed, new power sources for new markets, 1/21, p.15
See also Electric Power
See also Solar Energy

Presidents: See Management

Presses:
Big powder press, Sylvania's Towanda plant, 4/8, p.25
Briquetting press, pic., 1/21, p.30
Forging press (English) and manipulator operated by punched cards, 1/14, p.39
Forge press, preset cycle, 4/15, p.73
Hot forming press, close temperature control, 3/4, p.33
Stamping press (refrigeration fins), 2/25, p.54

Pressure Vessels:
Manipulator for 35 ft welds, 1/28, p.49
Shear spinning makes thinner vessels, 1/21, p.33
Steel capsule for AEC project, 3/4, p.69

Price Fixing:
Metalworking firms indicted by N. Y. jury, 4/8, p.24

Prices:
Aluminum ingot, will prices follow other increases? 5/27, p.27
Chromium alloy adjustments, 2/4, p.57
Competition in steel holds prices in line, 4/29, p.24
Platinum, palladium reductions, 4/8, p.87
Seamless pipe reductions, Allegheny Ludlum, 3/25, p.33
Steel increases (Wheeling), 4/15, p.28
Steel hikes, can they survive all tests? 4/22, p.25
U. S. Steel cuts stainless prices, 2/25, p.87
World price comparison on steel (Japan, British, U. S.), 1/21, p.82

Process Controls: See Computers

Procurement (Government): See Defense Contracts

Product Development:
AMF and Harris-Intertype programs, 2/4, p.35 and 37
Converting new products into gold mines (Peter Hilton), 3/11, p.100
Editorial: Selling the new markets, 1/28, p.15
Put value analysis into new product introductions, 1/7, p.159

Production:
1962 ingots and steel castings, 1/21, p.57
Plastic raw materials, 2/11, p.18
World steel (chart) countries, 2/11, p.174 and 5/27, p.23
World steel (Russian output nears U. S.), 2/18, p.29

Production Costs:
Don't loose your profits in finishes, tolerances, 2/18, p.56
Tighten tolerances on production costs, 1/7, p.149

Production Control:
Japanese carmaker (Toyo Kogo) automates production control system, 6/10, p.100

Productivity:
Is productivity rise offsetting wage hikes? Eddy - Rucker - Nickels (table), 4/1, p.22
Kaiser plan will teach USW productivity facts (Ruttenberg address), 5/27, p.26
Productivity measurement (2 in 3 metalworking plants fail in five years), 1/28, p.98

Profit Formula: See Defense Contracts

Profits:
1963 metalworking: 4 cents from '63 cost dollar add 40 cents to profit dollar, 1/7, p.157
How to join the profitmakers (special issue), 1/7
U. S. Steel: Only profits solve unemployment, 3/25, p.28

Public Affairs: See Politics

Pumps:
Pump for liquid metals, 3/18, p.18

Punched Cards: See Numerical Controls

Punching:
Copper clad laminated plastic can be punched (RCA), 4/1, p.52

Purchasing:
Airline road show searches for purchasing bargains, 3/18, p.28
Audit your purchasing for greater profits, 1/7, p.141
Buying is more than spending (competitive bidding), 1/7, p.139
GE McAleer: How purchasing agents can make standards pay off, 3/11, p.28
If you have purchasing problems check team buying, Holley Carburetor Co., 4/29, p.48
Kaiser's blank checks to venders cut purchasing paperwork cost, 3/4, p.30
Purchasers' goals: Value, function buying (Sylvania's Finley), 1/7, p.292

Purchasing Agents: See NAPA

Q

Quality Control:
Machine capability studies (Timken), 6/17, p.29
Machines to inspect quality info, TO, 5/27, p.20
'Prevention work' lowers quality cost, 5/27, p.98
Quality Assurance-customer service, (IDQA), 1/28, p.53
Quality information equipment stressed at ASQC conference, 6/10, p.119
Systems engineering, route to better quality (Feigenbaum addresses meeting), 6/3, p.29

R

Radio, Television:
Closed circuit TV (Russia) monitors pipe welds, 1/21, p.20

Radio remote control directs slag removal, 4/22, p.35
TV camera tubes for x-ray motion study, 2/11, p.119

Radioisotopes:
Industry report: New tools, new markets, 3/18, p.29

Railroads:
Capital expenditures, 3/18, p.18 and 4/29, p.18
Tank car shell of glass reinforced plastic, 4/15, p.35
See also Freight Cars, Freight Rates

Rare Earths:
Didymium metal, lower priced at Ronson, 6/24, p.76

Reduction Plants:
Aluminum plant, Tennessee, readied by CAC (Swiss affiliate), 2/18, p.33
Forecasts sonic energy for ore reduction, 4/29, p.28

Refineries: See Smelting, Refining

Refractories:
Alloy-Hastelloy X anchors hold furnace refractory, 6/17, p.74
Basics in use of higher temperatures, 1/14, p.37
Basic brick, new type 'direct bonded' stronger when hot, 6/17, p.80
Design change on refractory cover for furnaces, 4/22, p.140

Refractory Metals:
Carborundum blows steam against molten ceramic to make refractory fibers (cover), 1/14, p.34
Definition of refractory materials, 1/14, p.35
Deep drawing of refractory metals, researched, TO, 6/24, p.20
GE's new Cleveland plant, equipment and production, 5/13, p.31
Metal foams (powder material) produced with refractory methods, 5/20, p.65
Refractory makers find new ways to manage heat (feature article), 1/14, p.35
Spongy refractory (Russia), 1/14, p.20

Reliability:
IDQA (Individual Documented Quality Assurance) program Standard Pressed Steel, 1/28, p.53

Research & Development:
Administration's incentive proposals, 1/28, p.25
Administration's proposal — $50 million tax break plus direct grants (Holomon heads program), 2/4, p.21
Anaconda American Brass program: Planning the research route to profits, 2/25, p.43
ASTME sets up grants for manufacturing study, 3/11, p.67
Dockson urges private business to boost R&D spending, 2/4, p.86
Dr. Moore (ICRA): How to get more from research, 6/3, p.53
European research and ours, differences, 4/8, p.22
Europe's research competitive, 4/15, p.27
Federal R&D obligations in '63, NSF survey, 1/7, p.29
Industrial systems research at U. of Mich. lab, 5/6, p.83
Lead-zinc research status, 5/6, p.28
Locating research labs, people factors, 4/15, p.93
Metals research (Dr. Suits-GE) warns steelmakers, 5/27, p.24
NMTBA seeks permanent R&D group, 3/11, p.67
NRCST center aids scientists in locating information, data system, 4/8, p.69
Planning the research route to profit, 2/25, p.42
SKF lab, bearings problems, 6/17, p.33

Resistance Welder Manufacturers' Assn.:
Elects, B, 1/21, p.30

Retirement:
Youngstown Sheet & Tube sets mandatory retirement, 2/4, p.48

Road Shows:
Trans World Airlines: Road show searches for purchasing bargains, 3/18, p.28

Roads: See Highways

Rolling Mills:
Japan's Daido planetary mill, 1/14, p.46
New rolling mill (Taylor) to roll thin tin, 4/15, p.17
New tech.: Rolls heated to red heat to make strip, 3/18, p.20
Reynolds unveils new process for rolling aluminum sheet, 3/4, p.30
Roll forging, Holub process, at Czech auto plant, 5/6, p.72
Transverse rolling, Holub process (Prague) for heated billets, 2/11, p.20
Ukraine, automated mill, 6/17, p.76

Rubber:
Dunlop of Canada, new lightweight rubber-EPT, 2/4, p.53
Expanded Royalite, new plastic for trailer bodies, 5/20, p.55
Rubber draw die, no scratch, 2/11, p.93

Rundt Report:
U. S. unions support strikes abroad, 3/4, p.104

Russia:
Article feature: The Soviet economic offensive (trading trends), 2/18, p.51
1962 economic report, 2/11, p.173
Ausform via extrusion, 3/18, p.20
Automated rolling mill, Ukraine, 6/17, p.76
Blast furnace, world's biggest claimed, TO, 5/13, p.20
Blooming mill, Cheliabinsk Eng. Wks., 6/17, p.117
Chrome dumped in Europe by Soviets, 4/8, p.24
Chrome price cuts threaten African firms, 2/18, p.99
Compact car, Zaporozhets, 2/18, p.99
Continuous casting license sought by U. S. firms, 6/17, p.29
Foaming coke and graphite study, TO, 4/22, p.20
Gears made by hot knurling, 2/25, p.20
Glass for auto construction, TO, 6/17, p.20
Great Britain No. 1 trading partner, 1/14, p.84
Induction and vacuum heat treating furnaces exhibited, 3/18, p.20
L-D converter plant in Lipotsk rumored, 2/4, p.83
Machine tools-metal cutting output, 1/14, p.83
Manned space missions forecast, 6/24, p.119
Merchant fleet threatens U. S., 5/27, p.18
Metals vacuum rolled, TO, 3/11, p.20
Nonferrous castings, liquid state heat treating, 2/25, p.20
Production vs U. S., 5/20, p.17
Rolling mill (Urals) to roll strip at 60 mph, 3/4, p.20
Roll molten metal, TO, 6/24, p.20
Scientist (Veinberg) describes solar power plant designs, 4/1, p.18
Space journal advocates raising chickens in spaceships, 1/29, p.95
Sputnik metal analyzed, 1/21, p.20
Steel consumption, Red Bloc nations, 2/11, p.174
Steel consumption (countries), 2/11, p.174
Steel output in '62 short of target, 2/4, p.83
Steel production increases, oxygen expansions, 4/1, p.98
Steel, productivity hikes seen for '63, 3/18, p.27
Tube rolling controlled automatically, 5/6, p.129
Welding experts visit Russia: Labor shortages spur technology, 3/11, p.100

S

St. Lawrence Seaway:
Income from tolls behind estimates, 3/25, p.82

Safety:
Safe containers for spent nuclear fuel elements, 6/10, p.115
Safety monitor for liquids contamination, TO, 5/13, p.20

Salaries:
Engineers' median salaries, 3/11, p.66
Engineers vs nontechnical jobs, percentage gap, 3/18, p.18
Engineers, industry and government, 4/22, p.19
Europe's whitecollar salaries, comparison by countries, 2/4, p.83

Salesmen:
Computer aids sales manager, card system, 1/7, p.160
Industrial momism, no aid to salesmen, 1/28, p.98

Sales Programs: See Marketing

Saws: See Cutting, Shearing

Scales, Weighing:
States urged to adopt uniform weight standards, 4/8, p.71
Steel weighed by overhead crane via digital computer, 1/14, p.27

Scrap:
1962 consumption, iron and steel scrap, 1/21, p.69
BDSA to study problems, 3/11, p.33
Institute meeting, looks to Congress for special research funds, 4/28, p.29
Scrap cutting dock, gantries have powder cutting torches, 6/10, p.115

Screw Measuring Systems:
Bausch & Lomb get ready for optical measuring, 5/20, p.60

Sealants:
Liquid plastic sealant for bearings holds down fretting corrosion, 1/28, p.48
Silicone rubber compound sealer, 5/13, p.72

Service Centers:
See Warehousing, Distribution

Sheet & Strip:
Aluminum sheet, new process at Reynolds, 4/1, p.39
Nickel sheets marketed by Du Pont, 4/8, p.26
Pallet system protects thin aluminum magnet strip during shipment, 4/8, p.58
Sheet flatness measured, 1/14, p.20

Shipments:
Concrete reinforcing steel bars, '62, 1/7, p.260
Finished steel, 1962-1st eleven mo.s, 1/14, p.18 and '62 mill shipments, 2/11, p.147
Merchant steel bars, '62, 1/7, p.260

Ships, Shipbuilding:
Polaris submarines cleaned ultrasonically underseas, 4/8, p.20
Submarine hulls, high strength steels, TO, 5/27, p.20
Submarines of the future use laser sensors on ocean floor, 5/27, p.79
Submarines of titanium, Navy seeks lighter materials, 6/17, p.79
Swedish turbine tankers, 6/3, p.102
Swedish tanker equipped with pitch propellers, 6/17, p.117
Swedish shipyard, new assembly line, 6/24, p.119

Signal Systems:
Japanese job shop uses signal system for tool room needs, production, 4/29, p.50

Silver: See Nonferrous

Small Business:
Area Redevelopment aims to help firms in government contracts, 4/15, p.93
Exploring new markets (editorial), 2/18, p.15
Finding new markets, new products, 3/4, p.50
Small business forums pay off for Martin Co., 1/7, p.146

Small Lot Stamping Institute:
Merged, B, 1/7, p.35

Smelters, Refineries:
Aluminum smelter, Norway, 3/18, p.35
Aluminum smelter, Ghana, 3/18, p.35
Anaconda extracts alumina from domestic clays, 5/27, p.29
Copper powder, hydrometallurgical refining (Monsanto), 6/10, p.124

Smoke, Smog:
Auto 'afterburner' for smog control tested in Calif., 1/21, p.72 and 5/6, p.89
Auto smog control, 4/8, p.27
Space scientist reports smog problem in earth's upper atmosphere, 3/4, p.67

Society of Automotive Engineers Inc.:
Elects, B, 1/21, p.30
Meeting address, foreign research competitive, Prof. Schmidt, 4/15, p.27

Society of the Plastics Industry Inc.:
Production of plastic raw materials, 2/11, p.18

Solar Energy:
Russian studies, 2/18, p.20
Solar powerplant design described by Soviet scientist, 4/1, p.18

Soldering:
Can seam soldering machine, TO, 5/6, p.20
Metal solder-miniature, TO, 3/18, p.20
Soldering faster with coatings on electrical components, 4/8, p.58

Sonic Energy:
Use forecast for earth moving and ore reduction, 4/29, p.28

Sound: See Ultrasonics

Space Conference (Chicago):
Reports: Demonstrated capability key to space contracts, 5/13, p.27
NASA's Fong: Wanted—more industry use of space-generated ideas, 5/20, p.59

Space Materials & Developments:
Ablative coatings resist missile heat (AC-1, AC-2), 6/3, p.31
Aerospace Research Application Center, Indiana University (newly formed) to speed space knowhow, 1/21, p.28
Agena, shelf-item booster, 6/17, p.18
Alcoa proposes new rocketmaking process, 2/11, p.31
Antenna for SYNCOM satellite (built by Goodyear) is transportable tracking, 2/4, p.53
Antenna system, Calif., contract to Rohr, 3/11, p.68
Arc spotwelder fastens thin bracket to missile, 4/29, p.57
Atlas missile tanks, assembly line, pic., 5/13, p.35
Big new markets of the sixties: ARPA seeks new materials, 5/27, p.77
Big new markets: A-OK west of the moon, 6/10, p.92
Camera coatings protection for Saturn blastoff, 4/22, p.20
Coatings to protect refractories (space vehicles) urgently needed, 6/3, p.70
European communications satellite system (Eurospace), 6/10, p.169
Glass fiber rocket motor casings, 2/25, p.31
Laser-reflector beam system to launch satellite, 6/10, p.103
Man on moon would stimulate business, analysts told, 4/29, p.27
Moon-manned trip possible by '70, 5/6, p.81
Moon, buildings for condensed powder form, TO, 6/17, p.20
Mooncar powered by liquid hydrogen-oxygen, 1/21, p.18
Materials pushed by designers (crystals, fiber metals, etc.), 5/13, p.63
Nickel coatings: Ultrasound boosts electroforming quality, 6/3, p.67
Practical satellites to collect data from remote areas (NASA study), 4/1, p.61
Reliability in space effort, NASA's problem, 4/8, p.106
Reliability, materials, biggest space problems, 5/6, p.79
Reliability improved (vibration, noise, shock damage), TO, 5/27, p.20
Rocket chamber 280 in.-diameter, 3/4, p.69
Satellite of stainless, 3/25, p.20
Satellite temperatures controlled by color paints, TO, 6/3, p.20
Saturn V rocket moved on giant truck, 6/3, p.18
Smog problem in upper atmosphere, 3/4, p.67
Spacecraft moved by huge crawler transports, 2/18, p.18
Spacecraft simulation unit tested at Douglas, 2/11, p.18
Space trains (cover sketch), 6/10, p.92
Tantalum, once spurned, now in list, 2/11, p.90
Titan launching system, stainless wire braid protects fuel lines, 3/25, p.35

Tantalum now on aerospace list, space vehicle material, 2/11, p.90
Tiros weather eye in orbit, TO, 6/3, p.20
Titan III-C to have first stage liftoff thrust, 4/22, p.146
Titanium honeycomb panels, 3/25, p.20
Weightlessness device for simulated tests, 4/29, p.19
Wrench for space repairs, 3/25, p.20

Spinning:
Shear spinning is becoming commercial, 1/21, p.33

Springs:
Tiny spring for electronic computers, TO, 5/6, p.20

Stainless Steel:
AF develops high strength AFC 77, 2/18, p.33
Chart: Producers of stainless steel, products brought up to date, 3/18, p.104; more producers listed, 4/1, p.46
Du Pont bids for stainless market (stainless coating for auto trim), 3/18, p.25
Firms survey stainless users (lack of knowledge on various grades), 4/22, p.29
Heat treating toughens stainless shaver heads (Schick), 3/4, p.71
New stainless (Checkwate 8) used for standard weights, 4/22, p.140
Stainless tubing cold formed (Flo-Rol), 1/21, p.42
Stainless tubing (for antennas) coiled flat for storage, 4/1, p.52
Weight standards urged for States, 4/8, p.71
See also Automotive (use)

Standards:
AWS establishes brazing joints standard test, TO, 6/3, p.20
Gear measurement standard, TO, 5/20, p.20
Lack of international standards reported at conference, 2/25, p.28
McAleer (GE): How purchasing agents can make standards pay off, 3/11, p.28
Stainless steel weight standards urged for States, 4/8, p.71
Stainless new (Checkwate 8) for standards and measuring, 4/22, p.140

Stanford University:
Atom smasher improved by superconductivity, 5/13, p.86
Ceramic tests, 1/14, p.20
Emphasis on graduate training, 1/28, p.98
SRI study: Retraining workers, machine plus teacher, 5/6, p.93

Steel Alloys:
AISI 4130 steel used to forge cylinder caps (Nike launcher), 1/28, p.55
AISI M-4, orientated electrical steel, 4/22, p.140
Aluminum electrical steels, TO, 6/10, p.20
J&L's new low temp. alloy, 1/21, p.29
Lukens' new carbon plate steels, M-Series, 1/21, p.28
Maraging steel progress, TO, 3/11, p.20
SAE 4626, gear steel, 2/4, p.20
Razor blades, stainless or chrome steel? 4/15, p.20
Selenium improves steel, 2/11, p.20
Strain aging and tempering at low temp. improve H-11 steels, Army test, 2/11, p.20

Steel Dumping:
Antidumping amendments, Senators seek, 5/6, p.83
Antidumping amendments could kill international commerce (Graubard), 6/17, p.117
Antidumping hearings on wire rods (Luxembourg, Belgium), 5/20, p.27; and ruling, 6/24, p.28
Belgium dumps rods, Treasury ruling, 3/25, p.153
Charges under fire (products and countries), 3/4, p.28
French pipemakers charged by U. S. Steel, 1/14, p.17
French rod dumping, Treasury rules, 6/10, p.29
Japan dumps stainless sheets, 2/11, p.18
Japanese cold rolled sheets dumped, Columbia - Geneva charge, 4/1, p.24
Kaiser and Bethlehem file charges, 2/11, p.18
U. S. Steel adds Japan to dumping charges (other countries previously named), 1/7, p.28

STEEL (Features):
1. The big new markets of the sixties, 2/4, p.30
2. The Neglected cost of material handling, 2/11, p.85
3. The Soviet economic offensive, 2/18, p.51
4. Planning the research route to profits, 2/25, p.43
5. Foundation for attack on the big new markets (strategy of organization), 3/4, p.49
6. Where computers call the shots best, 3/11, p.48
7. The new breed of managers for the big new markets, 3/18, p.95
8. Process control—Where buttons mean billions, 4/8, p.53
9. Integrated circuitry where it pays to think small (sometimes called microelectronics), 4/29, p.40
10. The booming world of silent sound (ultrasonics), 5/6, p.63
11. Designers push materials to limit, ask for more, (crystals, fiber metal structure, etc.), 5/13, p.63
12. Wanted: Future today, impossible tomorrow (defense markets), 5/27, p.74
13. How to get more from research (ICRA programs-copper products, applications), 6/3, p.53
14. A-OK west of the moon, business forecast, 6/10, p.92
15. What metalworking managers expect in 2nd half, 6/24, p.63

Steel Founders' Society of America:
Elects, B, 2/18, p.35
Survey foundries on shipments of steel castings, 3/11, p.17

Steel Industry:
AISI meeting: Steelmakers take aim at world competition (production, Europe's mills), 5/27, p.23
AISI address (Dr. Suits): You're behind in metals research, 5/27, p.24
Imports (rundown of major sources), 3/18, p.126
Labor talks (see Labor)
Little 3 steelmakers delayed by problems (Arkota, Gulf States, Sovereign), 2/11, p.29
Steel price hikes, can they survive all tests? 4/22, p.25
Strike threat? Small buyers recheck inventories, 4/29, p.23
Steel increases to consumer on 'selective' basis, 4/22, p.27
See also Financial
See also Production

Steelmaking:
Armco's slabbing-plate mill at Houston, eases pressure, 6/24, p.74
Atmosphere controlled furnace (Firth Sterling), fast anneal, 5/13, p.74
Blast furnace (Dorothy-USS) has third bell, Duquesne, 6/10, p.104
Blooming mill and soaking pits levels steel capacity (Atlantic Steel), 3/11, p.60
CF&I activates parallel wide flange beam mill, 2/18, p.62
Carbon furnace insulations, new graphite felt, 5/6, p.76
Charging machine cuts open hearth load cycle (Blaw-Knox), 2/4, p.44
Coal injection (B&W) moves fuel by air, 3/4, p.60
Coal injection, British blast furnace, 1/14, p.48
Continuous casting (see Casting)
Continuous steelmaking bit closer (Australia—Dr. Worner), 6/3, p.64
Electroslag ingot remelt progress, BISRA, 1/14, p.20
Gaugemeter: Mill stand serves to measure strip thickness, 3/11, p.60
Ladle linings dried (electrical heater), 2/18, p.64
Natural gas endorsed as open-hearth fuel, 3/18, p.31
Oxygen (L-D) computer control, Nippon Kokan, 4/8, p.23
Oxygen converter (L-D) gas recovery process (Japan dev.), 1/7, p.166
Oxygen converter, water cooling extends hood life, 6/10, p.120
Oxygen L-D process and capacity, 1962, 1/21, p.27
Oxygen processes and continuous casting highlight technical sessions at AISI, 6/3, p.71
Pelletized ore in blast furnace, 1/21, p.44
Pellets self-fluxing, 3/4, p.62
Pressure pouring, U. S. Steel, 6/17, p.17
Rotor furnace improvements, South African - Vanderbijlpark plant, 4/15, p.74
Vertical strip motion simplifies gage unit (coating thickness-tin plate), 4/29, p.52

Steelmaking Equipment:
Concast-Sendzimir agreement for selling equipment combinations, 1/14, p.27

Steel Mill Controls:
Armco slab-plate mill, computer control (Houston), 6/10, p.33 and 6/24, p.74
Automating a steel plant (management organization chart), RT&B, England, 1/14, p.42
Automation (total) for steel mill 5 to 10 years away, 3/11, p.52
Computer for oxygen steelmaking, Duquesne Wks., 2/25, p.20
Computer operates hot strip mill, McLouth, 2/18, p.31
Computer-process controls (cover story): Where buttons mean billions, 4/8, p.53
Computer to control British mill (Spencer Wks.), 4/29, p.49
Computerized electric furnace, Lukens, 2/25, p.18
Digital control for French hot strip mill, 4/29, p.18
Gaugemeter on English hot strip mill, 3/11, p.62
Japanese mill, computer controls reverse billet mill, 3/11, p.58
Nippon Kokan L-D computer control, 4/8, p.23
SKF's Hofors (Sweden) Wks., automated by electronic data processing system, 4/1, p.27
Thermocouple measures temperatures in furnace, 2/11, p.20

Steel Mill Products:
Export-imports, 1962, 3/18, p.120
Mill shipments of finished steel '62, 2/11, p.147

Steel Mills:
Armco slab-plate mill, Houston, 6/10, p.33 and 6/24, p.74
Bethlehem moves ahead on Indiana mill, 2/25, p.31
Bethlehem's 8 in. bar mill, Pacesetter at Johnstown, Pa., 6/3, p.33
CF&I activates parallel wide flange beam mill, 2/18, p.62
Cuba, Oriente province, 1/7, p.289
Czechoslovakia, near Kosice, rolling mill, 5/27, p.134
India's mill may get U. S. aid, 1/14, p.25
India's Bokaro mill, feasibility study by U. S. Steel, 5/13, p.91
Moroccan mill discussed, 4/15, p.17
Nippon planetary mill, 1/14, p.46
Texas mill to be built by Sovereign Steel, 4/29, p.29
Turkey, structural fabricating plant (Austin contract), 2/11, p.33
YS&T plans 80 in. sheet mill, Indiana Harbor, 6/3, p.26
YS&T expansions, Chicago area, 3/11, p.68
Yugoslavia (Skoplje), contracts let, 1/7, p.289

STEEL's Panel of Economic Consultants:
Forecast: 1963 into '64, 4/15, p.25

Steel Service Center Institute:
Welch: Industry report, forecast, 1/21, p.25
Meeting consensus: Business up, profits down, 6/3, p.27

Steel Shipping Containers Institute:
Marking containers if made of foreign steel, 2/25, p.18

Stockpiles:
Aluminum, copper, nickel goals (OEM), 1/14, p.22
Aluminum disposal plan coming, 2/18, p.17
Aluminum industry may have to accept disposal plan, 5/6, p.18
Automakers stockpile aluminum, 4/8, p.17
Cadmium, bill calls for release, 1/28, p.72
Cadmium disposal bill status, 3/11, p.73 and 4/8, p.87
Cadmium stockpile sale lifts producer price, 5/6, p.18
Cadmium disposal program (GSA) angers platers, 5/27, p.29
GSA bid opens for Grade H primary pig aluminum, 3/4, p.18
West Coast importers not stockpiling, 4/1, p.64

Strikes: See Labor

Structural Steel:
1963 outlook for fabricated structural steel, 1/7, p.259

Submarines: See Shipbuilding

Supersonic: See Aircraft

Suppliers:
NAPA: Evaluation of supplier performance (book), 4/8, p.68

Surface Treatment:
See Metal Cleaning, Finishing

Surplus Equipment:
See Defense Supply Agency

Sweden:
Automakers exports, 4/1, p.98
Steel consumption per capita, 3/11, p.97
Union attacks right to fire, 3/25, p.177
Vacations up to four weeks, 6/24, p.120
See also Ships, Shipbuilding

Systems Engineering:
See Management Systems

T

Taconite Plant:
Ford's Minnesota plant hinges on tax action, 3/4, p.30

Tantalum:
Tantalum, once spurned, now on aerospace list (space vehicles), 2/11, p.90

Tape Control: See Numerical Controls

Taxes:
Administration's proposals (Kennedy's State of Union address), 1/21, p.26
Administration's tax research incentive proposals, 2/4, p.21; no major opposition, 3/25, p.27
Brady (Foreign Trade Council): Marketing, packaging do add value (tax hearings), 4/1, p.60
Consumption tax proposed by steelmaker, 2/4, p.17
Dillon: Highlights of testimony (small firms may get tax break), 2/11, p.28
State and local governments may up taxes, 6/17, p.18
Tax credit plan tied to foreign aid, 4/22, p.149

Technology:
Aerospace Research Applications Center, Indiana Univ., new plan aims to speed space knowhow, 1/21, p.28
Analysts told: Man on moon would stimulate business (developments), 4/29, p.27
Big new markets of the sixties, 2/4, p.30
Designers push materials, ask for more, 5/13, p.63
GE (Dr. Suits): Competition catalyzes use of new technology, 2/4, p.86
Men and machines will part in tomorrow's plant, 2/4, p.42
Shortcut to product diversification (DLT plan), 2/25, p.30
Idea swap 'essential' for world trade: Grob (Renault) and Nagano (Fuji Iron), 2/25, p.104
World technology: How are we faring in battle to keep pace? How European research differs from ours and why? 4/8, p.22

Telephones:
Dial-o-verter for missile date, 1000 words per minute over telephone, 2/25, p.63
Electronic switching system operates in microseconds, 2/11, p.118
Interplanetary galactic telephone, 4/29, p.20
Undersea telephone parts, forged beryllium copper cylinders, 1/28, p.58

Television: See Radio, TV

Temperatures:
Flame temperature measured by

beta rays in Ontario steel plant, 2/18, p.62
Refractory makers find new ways to manage heat, 1/14, p.35
Ten steps listed for temperature specs (thermoelectronics), 2/25, p.59

Texas:
Steel importers win Buy American battle in Texas, court decision, 2/4, p.18

Thermoelectrics:
Compact thermoelectrics produced by evaporation process, 3/4, p.71
Cutting tools cooled thermoelectrically, 5/13, p.80
Teaching device for principles of thermoelectrics, 2/25, p.19
Ten steps listed for temperature specs (Sonnenschein, Carter Products), 2/25, p.59

Tin:
Molten tin, liquid vs solids, TO, 6/10, p.20

Tin Plate:
Australian production (Broken Hill Ltd.), 2/18, p.75
Bethlehem thin tin mill, description, 3/18, p.33
J&L expansions for thin tin market, Aliquippa (Stephen's report), 1/21, p.52
Soft drink promotion market readied by producers (firms), 2/18, p.33
Steel firms add facilities (TC&I, Inland), 1/7, p.33
Stockpiled tin plate payment may be delayed, 3/11, p.85
TC&I thin tin plate mill, Fairfield, Ala., 1/14, p.27
Vertical strip movement while reading coating thickness simplifies gage unit, 4/29, p.52

Titanium:
1963 shipments forecast, 1962 report, 1/21, p.27
Purge chambers for inert gas welding of titanium, 2/18, p.59
Titanium for supersubmarines? Navy research, 6/17, p. 79

Tooling System: See Machining

Tool & Diemakers
Apprenticeship programs inadequate, skilled shortages, 3/25, p.83

Tool Show Features:
Highlights of conference (products), 4/22, p.137

Tool Steel:
Guide to tooling materials, 4/22, p.97
Machinable carbide (Ferro-Tic C), 5/27, p.96
Machinable carbide die (Ferro-Tic C), cuts costs, 6/17, p.31
Rubber draw die doesn't scratch, 2/11, p.93
Tool life increased by process that relieves residual brittleness in alloy steels (stress relief), 2/11, p.101
Vacuum melted die steel, 2/11, p.101

Tools (Cutting):
Carbide inserts, shape key to savings, 6/24, p.81
Carbide inserts-throwaway, cost cutters, 2/18, p. 58
Kronenberg (consultant) progress report, TO, 5/13, p.20
Thermoelectrically cooled cutting tools, 5/13, p.80

Toys:
Industry report, 3/25, p.18

Trade Association:
Copper Development Assn. formed, 1/14, p.26

Trade Missions:
U. S. Chamber of Commerce mission views Japan as good machine tool market, 1/14, p.25
Commerce Dept.'s program in action, 4/29, p.26

Training:
California retraining programs, 4/15, p.92
Engstrom (RCA): Challenge of retraining labor force, 4/8, p.19
Manpower retraining programs in California, 4/15, p.92
Stanford Univ. retraining, machines plus teacher, 5/6, p.93
Tool distributor salesmen get C.O.S.T. marketing talks, 4/8, p.60
Vocational education needed, 3/25, p.180

Transistors:
Device called metal oxide semiconductor transistor, 2/18, p.20

Transportation:
Automatic Skybus rapid transit experimental run (Westinghouse's), 6/17, p.19
Commuter Service, N. Y. waterways, with hydrofoil boats 4/15, p.19
Proposed rapid transit, StaRRear, 5/20, p.19
Supersonic commercial transport, timetable, 1/28, p.18

Tubing: See Pipe, Tubing

Tungsten Ore:
Scheelite concentrate from Canadian mine, 1/21, p.57

Turbine Industry:
Awaits ruling on foreign bids, 3/11, p.28
Hitachi (Tokyo) protests turbine contract favoring Allis-Chalmers, 5/13, p.92
Mitsubishi Heavy Industries, Tokyo, low bidder, 6/3, p.18

Turnings:
Tangled metal turnings converted to chips, 3/11, p.64

U

Ultrasonics:
Aid to atomization (oil burner small enough for dorestic water heater), 1/28, p.20
Auto makers send high speed steel tools out for ultrasonic treatment, 5/13, p.20
Bell Lab: Twisting a wave of ultrasonic energy with magnetics, 1/21, p.20
Booming world of silent sound (new market), 5/6, p.63
Borg-Warner ultrasonic cleaner for auto valve bodies, 2/4, p.40
Descaling removes forging scale with ultrasonics, 4/29, p.54
Point type transducer for ultrasonic testing devices, 1/14, p.20
Pressure test transistorized unit, leaks in pipe fittings, etc., 6/24, p.84
Submarine cleaned ultrasonically undersea, 4/8, p.20
Ultrasonic fatigue detector, 3/25, p.20
Ultrasonic gaging (pulse echo tech.), pressure vessels and pipelines, 4/22, p.137
Ultrasonic thermometer pinpoints ocean temperatures, 4/15, p.18
Ultrasound assists grinding, 4/15, p.31
Ultrasonic vibrations help grinding, (article) 5/20, p.56
Ultrasound vibrations boost electroforming quality, 6/3, p.67

Underwater:
Japanese firm plans for undersea vacation resort, 1/21, p.15
Underwater tank of future (new defense markets), 5/27, p.74

University of California:
Mason Haire (researcher) proposes cafeteria style wage plan (workers chose earnings-benefit split), 3/11, p.31
Livernash (Harvard) addresses management conference on collective bargaining, 4/8, p.24

University of Michigan:
Lab to study worldwide industrial systems, 5/6, p.83
Climax Molybdenum lab on campus, 5/6, p.89
Dr. Likert: Flaws in communication stifle good ideas, 1/14, p.86
Metal failure research (signalled by noise), 5/20, p.31

University of Southern California:
Dockson urges private business to R&D spending, 2/4, p.86

Used Machinery:
Markets report (MDNA meeting), 5/27, p.27

V

Vacuum:
25 vacuum furnaces, who's to buy? Steelmakers who have installed furnaces, 2/4, p.25
Hot vacuum forming (sheet metal parts), 4/1, p.20
Metal structures studied hot in miniature vacuum furnace, 4/1, p.52
U. S. ingot mold degassing process licensed in Germany, 4/29, p.54
Vacuum evaporator coating tech., 1/14, p.26
Vacuum furnaces insulated by felt form of materials, bypass graphite and carbon powders, 5/6, p.76
Vacuum induction melting furnace, Special Metals, 3/18, p.31
Vacuum remelt furnaces (Cameron Iron Wks.) for superpurity aerospace alloys, 6/10, p. 109

Value Analysis:
A vendor looks at value analysis: Chart—roadblocks to good value engineering, 1/7, p.143
Booklet (and article): Relationship between production cost and tolerances and finishes, 2/18, p.56
Put VA into new product introductions, 1/7, p.159
The case for design beyond engineering (Knapp Associate) 5/13, p.70
Martin Co.'s program, Orlando, Fla., involves all employees, 5/27, p.91

Valves:
Air valve dev. (33 components do work of 1460 valves), 5/13, p.80
Automated brazing machines, water valve firms, 2/25, p.49
Welding pipes to pipeline valves in shop instead of in field, 3/4, p.72

Vibrations:
Ultrasonic vibrations help grinding, 5/20, p.56
Unit ends chatter and vibration in machine boring, 5/13, p.73

W

Wage-Price Guidelines:
President sets up wage-price guidelines to check inflation, 1/28, p.26

Wages:
Australia, for skilled workers, 2/18, p.100
Cafeteria style wage plan (workers decide earnings and benefits), 3/11, p.31
Is productivity rise offsetting wage hikes: Edd y-Rucker-Nickels (table), 4/1, p.22
European Common Market, differences in wage costs, 4/1, p.97
German wages vs U. S., 3/18, p.177
Kaiser plan, average of 10c an hour raise, 3/11, p.31
Japan seeks wage equal to Europe, 3/18, p.178
Machine tool ruling, Walsh-Healey, 5/27, p.17
Personal income (wages-salaries), 3/25, p.17

Warehouses:
Alloy Steels: New milling saw cuts costs, delivery time, 4/1, p.48
Automatic warehousing for food processor controlled by digital computer, 4/8, p.20
Colgate - Palmolive: Warehouse handles order a minute, Jeffersonville, Ind., plant, 3/25, p.72
Sara Lee, automated operation (systems concept), 6/17, p.28

Warehousing, Distribution:
Service centers modernizing to ease profits squeeze, 2/11, p.94
Steel Service Centers: Earnings, industry reports, 1/21, p.25 and 6/3, p.27

Wastes:
Electrochemical machining waste fluids converted to fertilizers, 1/28, p.20 and 2/4, p.20
Platers cut cyanide costs by evaporation recovery system, 2/11, p.119

Water:
Mexico: Distillation (fresh water) plant, 3/18, p.19
Salt water conversion tech. called thin film vapor compression (Westinghouse), 2/18, p.18
Salt water conversion practical (Carr, Undersecretary of Interior), 3/4, p.67

Weighing: See Scales

Welding Equipment:
Automatic precision welding equipment aids space builders, 3/4, p.31
Lincoln Innershield used to revivify N. Y. elevated tracks, 5/13, p.89
Manipulator for 35 ft welds (pressure tanks), 1/28, p.49
Page-Hersey buys huge resistance welding unit to produce wall pipe, 3/4, p.31
Plasma cutting lauded by Czechs, 6/17, p.82

Welding Show:
Features equipment, processes, 4/15, p.62 and 4/29, p.25

Welding (Arc):
Aluminum welded to other metals (gas metal-arc spotweld), 4/15, p.82
Arc spotwelder speeds missilework, 4/29, p.57
CO_2 pipeline welding, 1/21, p.20
Deere saves with gas-metal arc-welding, 6/24, p.68
Percussive welds for electrical connections, how to get (Coyne-Bell Telephone), 6/3, p.70
Rail welding system (submerged arcweld with heat treat unit), 3/18, p.115
Semiautomatic Squirt (torch) welder for tank shells, 2/25, p.51
Semiautomatic welders using vapor shielded arc process double speed (girders), 4/1, p.43
Welding glass linings of water heaters, 4/15, p.82

Welding (Diffusion):
Cold welding, problem for space industry, 6/17, p.31

Welding (Electron Beam):
Aerospace metals welds without vacuum, 5/6, p. 92
Honeycombs welded via electron beam method, 2/4, p.19
Portable vacuum chamber, boon for electron boom, 4/15, p.86
Used for spacecraft while in flight (study), 2/18, p.20

Welding (Flash):
Flashwelding stainless segment to alloy steel shaft (drive for outboard motor propeller), 5/27, p.86

Welding (Resistance):
Buttwelder 'stretches' blank stock widths, auto tops, 4/22, p.152
Expert evaluates three resistance weld advances (Jack Ogden, Fisher Body), 2/25, p.52
Studwelding flatcar, 2/18, p.59

West Coast Metal Importers Assn.:
Survey shows West Coast importers aren't stockpiling, 4/1, p.64

Western Reserve University:
ASM searching literature computer at Documentation Center, 3/4, p.58

Wire:
Hydrostatic extrusion, wire directly from aluminum billet stock, 3/4, p.65
Oxalate lube coating for stainless wire, 6/17, p.76
Stainless braids protect Titan fuel lines, pic, 3/25, p.35
Superconductive wire, high ductility, 5/6, p.87
Wire coils up to 5000 lb at Bethlehem, 2/25, p.66

Wire Rods: See Steel Dumping

World Fair:
Unisphere, permanent symbol, built by U. S. Steel, 3/18, p.35

World Markets: See Foreign Trade

XYZ

X-Ray:
TV camera tubes used for x-ray studies of metals, 2/11, p.119
TV camera and x-ray inspect welded pipe seams, 5/6, p.33

COMPANY INDEX

A

AA Industries Inc.:
Ultra-RoDex table, IE, 4/29, p.105

Ace-O-Matic Engineering Co.:
Gear motor, governor control, IE, 6/24, p.139

ACF Industries Inc.:
Grit blast cleaners installed at two plants, 2/25, p.71
Welding tank cars, pic., 1/28, p.32

Acme Mfg. Co.:
Traversing billy roll, polisher, IE, 3/25, p.197
Wet scrubbing machine for coil stock, IE, 1/28, p.110

Acme Steel Co.:
Buys English strapping firm, 3/18, p.33
Powered dispenser for steel strapping, IE, 2/28, p.114

Aerojet-General Corp.:
Develops plastic armor (AGC Type II), 4/8, p.26
Moves headquarters, B, 5/13, p.35
Rocket chamber (280 in.-diameter) fabricated, 3/4, p.69

Affiliated Manufacturers Inc.:
Vacuum transfer device moves tiny parts, IE, 1/28, p. 111

Air-Mite Devices Inc.:
Air press for high production, IE, 2/25, p.117

Air Products & Chemicals Inc.:
Builds oxygen plant for Chile firm, 1/28, p.32
Compressor, tenth size, TO, 4/15, p.20
Expansion program includes R&D, 6/10, p.33

Air Reduction Co. Inc.:
Continuous wave laser develops 9 watts of power, 5/13, p.88

Air Reduction Sales Co.:
Automatic welders for space builders, 3/4, p.31
Engine driven welder, IE, 6/24, p.135
Mild steel welding wire eliminates jamming, IE, 5/27, p.144
Welding gun CO_2 for thin gage metals, IE, 2/11, p.186

Airline Welding & Engineering Co.:
Controlled atmosphere welding chamber, IE, 5/20, p.107
Plastic bubble absorbs ultraviolet in welding, IE, 4/15, p.137

AiResearch Mfg.:
Heat exchanger for space unit welded-electron beam, 4/15, p.66

Airvac Corp.:
Vacuum lifting pads, IE, 2/25, p.119

Aitken Products Inc.:
Electrical heater drys ladle linings, 2/28, p.64

Ajax Magnethermic Corp.:
Buys McKay plant, B, 2/4, p.28
Gears induction hardened one tooth at a time, IE, 4/8, p.116
Induction furnace, ingot preheating, conveyorized, 6/24, p.84
Moving headquarters and divisions to Warren, 5/6, p.35

Alabama Gas Corp.:
Gas connections made with plastic coated steel tubing, 3/25, p.80

Alabama Wire Co.:
Merged, B, 6/3, p.35

Alan Wood Steel Co.:
Markets new iron alloy powder (AW941), 4/1, p.26

Alcan Industries Ltd.:
Automatic filler wire improves TIG spotwelding, TO, 2/11, p.20

Alco Products Inc.:
Tape controlled turret machines, 1/7, p.35

Allegheny Ludlum Steel Corp.:
Adds oxygen furnaces, 2/25, p.31
Price reduction on stainless strip, sheet, 3/4, p.77
Seamless pipe prices cut, 3/25, p.33
Stainless (Checkwate 8) used for standard weights, 4/22, p.140

Allen Mfg. Co.:
External wrenching spline drive for threaded fasteners, IE, 6/24, p.131

Allied Abrasive Co.:
Buys Federal Diamond, B, 3/18, p.35

Allied Automation Systems:
Mechanical template serves as control for robot arm, IE, 4/15, p.134

Allied Research Products Inc.:
Merges with Barrett Chemical, B, 1/28, p.32

Allied Structural Steel Co.:
Semiautomatics welders using vapor shielded arc process double speed (girders), 4/1, p.43

Allis-Chalmers Mfg. Co.:
Aluminum nitride refractory resists erosion, corrosion, IE, 1/7, p.322
Computer scheduled for pump testing, 5/6, p.33
Defense contract for hydraulic turbines, 4/29, p.19
Fuel source for military, space power study, 4/1, p.18
Turbine contract award (McNamara decision), 5/13, p.92

Alloy Steels Inc.:
Special milling saw cuts costs, delivery time, 4/1, p.48

Alloyed Electronics Corp.:
Aerospace metals, electron beam welds without vacuum, 5/6, p.92

All-State Welding Alloys Co.:
Welding products exhibited, IE, 4/15, p.134

Alpha-Molykote Corp.:
Teflon powder lubricant, IE, 4/22, p.225

Airoll Inc.:
Dedicates Oswego plant, 6/24, p.18

Aluminium Ltd.:
Acquires U. S. fabricating plants, 2/18, p.33
Buys interest in Italian rolling mill, 1/28, p.32
Rolling mill, Kingston Wks., 6/17, p.35

Aluminum Co. of America:
Alloys new—aluminum casting (354-359) and aluminum structural (6070-6061, 5/27, p.98
Aluminum anodes (alloy CB 75) resist sea corrosion, IE, 1/7, p.324
Aluminum smelter in Norway (negotiating), 3/18, p.35
Awards contracts, cold strip rolling mills, Ind., B, 6/24, p.33
Rocketmaking process proposed, 2/11, p. 31

Aluminum Extrusions Inc.:
Customer service dept. new, 3/11, p.65

Amchem Products Inc.:
Chromate coating for prepaint use attractive to coil coaters, 6/10, p.113

Amerex International Inc.:
Handles international business for: 5/13, p.35

American Brake Shoe Co.:
Buys S. K. Wellman, B, 4/29, p.30
Denison Eng.—double vane pumps, IE, 5/13, p.165
Denison presses designed for transfer lines, IE, 6/3, p.112
Joint ownership in Denison Hydraulics Japan Ltd., 5/27, p.33

American Broadcasting Co.:
Hagerty urges managers become TV 'performers,' 2/4, p86

American Can Co.:
Sund: Personnel executives measured in company profitability, 2/18, p.26

American Dockbridge Inc.:
Loading ramp, simplified design, IE, 6/24, p.134

American Machine & Foundry Co.:
Application for rail welding system, 3/18, p.114
Auto smog burner, 5/6, p.89
Buying Western Tool & Stamping, 6/10, p.35
Friction welder smaller and improved, IE, 5/13, p.156
Gott: AMF . . . search for things to automate, 2/4, p.35
Mechanical hand for automation, 1/21, p.20
Versatile transfer machine for short runs, 5/6, p.17

American Metal Climax Inc.:
Buys Hunter Eng., B, 4/29, p.29
Buys Schokbeton, B, 3/25, p.35
Capital expenditures for '63, 1/28, p. 31

American Motors Corp.:
Abernethy warns of horsepower race, 1/28, p.88
Cushman: Cites public reaction to bargaining breakdowns, 1/28, p.17
E-stick transmission, 3/11, p.89
Kenosha expansion planned, 3/25, p.33
Kenosha installation, third, 6 cylinder line, 5/6, p.122

American Precision Industries Inc.:
Buys Electromechanical Div. of Carmody, B, 6/3, p.35

American Sealants Co.:
Primer accelerates sealant curing time, IE, 4/8, p.118

American Telephone & Telegraph Co.:
Center for communications review, 3/25, p.83

American Twist Drill Co.:
Steel taps and reamers, IE, 4/29, p.102

Amertool Services Inc.:
To establish Japanese subsidiary (technical assistance), 2/25, p.54

Amsler Morton Corp.:
Soaking pits for Atlantic Steel, 3/11, p.60

Amsted Industries Inc.:
Pressure pouring process patented, 6/17, p.17

Anaconda Co.:
Aluminum from clay, extracting process successful, 5/27, p.29
Chile copper negotiations concluded, 5/27, p.110
Chilean expansion plans, 6/24, p.33

Anaconda American Brass Co.:
Measuring gases in copper alloys, cover, 2/25, p.42
Research program, planning route to profits, 2/25, p.43

Anocut Engineering Co.:
Electrolytic machining line debuts, 2/11, p.17
Electrolytic lathe machines forgings, 3/25, p.33

Arkota Steel Co.:
Debut delayed by technical-financial problems (Madaras process), 2/11, p.29

Armco Steel Corp.:
Benefits in use of pelletized ore in blast furnaces, 1/21, p.44
Continuous casting unit at Sand Springs Wks., 4/1, p.17
Expands Washington Court House plant, 5/27, p.31
Johnston: 19th century thinking—business, government, 4/8, p.17
National Supply headquarters moved to Houston, B, 6/3, p.35
Oriented electrical steel (M-4), 4/22, p.140
Sheffield eliminates differentials on wire, 4/22, p.174
Slab-plate mill, Houston, computer control, 6/10, p.33
Slab-plate mill eases pressure, 6/24, p.74
Spain: Tubing plant in Barcelona, 4/1, p.28

Armstrong-Blum Mfg. Co.:
Bandsaw, hacksaw improvements, IE, 4/22, p.221

Armstrong International Co., A. J.:
Credit cards for foreigners, 4/29, p.87

Arnold Engineering Co.:
A small, superconducting magnet dev., 5/20, p.70

Arvin Industries Inc.:
Exhaust system with small muffler, 3/11, p.90

Arwood Corp.:
Sweeny: Design guide rules for tolerances of investment castings, 1/21, p.40

Astro Structures: See Lear Siegler

Atlantic Steel Co.:
Blooming mill and new soaking pits level steel capacity, 3/11, p.60

Atlas Press Co.:
Lathe design, Clausing Div., IE, 5/27, p.153

Atlas Steels Co.:
Slab casting plant, Que., 6/3, p.72

Atlas Steels Ltd.:
Sold, B, 3/4, p.33

Aurora Corp. of Illinois:
Buys Gabriel Valve, B, 5/20, p.35

Austin Co.:
Contracts for Turkish structural mill, 2/11, p.33
New facility features automatic tools, 3/11, p.69

Automatic Welding Co.:
Portable wire feeder for hard surfacing, IE, 1/28, p.110

Automation Devices:
Unit delivers parts to remote machines, IE, 1/7, p.316

Automation Industries Inc.:
X-ray unit light, high power, Sperry Products, IE, 2/4, p.103

Autonetics: See North American Aviation

Avco Corp.:
Plasma spray coater, water cooled, IE, 5/20, p.118

Avery & Saul Co.:
High tolerances on bench plates, angles, IE, 3/11, p.117

Avery Label Co.:
Self-adhesive labels make PERT faster, IE, 5/6, p.150

B

B & C Metal Stamping Co.:
Automatic electrostatic painting setup, 2/4, p.41

B-I-F Industries:
See New York Air Brake

Babcock & Wilcox Co.:
Coal injection system moves fuel by air, 3/4, p.60
Converter hood life extended by water cooling, 6/10, p.120

Hydraulic shear trims hot slabs, Koppel, Pa., plant, 6/24, p.76
Puerto Rican contract (generating unit), 4/8, p.27
Technical assistance to Spanish mill, 3/11, p.35

Badall Co, Inc.:
Carbonitrided steel rolls for hot strip mills, IE, 1/28, p.106
Temperature uniform on hollow steel rolls, IE, 6/10, p.180

Baird Machine Co.:
Buying U. S. Tool, B, 2/18, p.35

Baird Corp.:
Name change, B, 5/27, p.33

Baldwin-Lima-Hamilton Corp.:
Builds automated, continuous finishing copper wire rod mill for Canadian plant, B, 2/11, p.35
Buys Green Fuel, B, 2/4, p.28
Corporate changes, German outlet, other moves, 3/25, p.84
Ginn: Trend to metal forming, 5/27, p.17
Steel vessel for AEC, 3/4, p.69

Bannock Steel Corp.:
Buys Gate City Steel, B, 5/20, p.35

Barker Engineering Co.:
Vertical milling head attachment, IE, 6/10, p.192

Barnes Co., W. F. & John:
Unit components, standard sizes, IE, 5/13, p.164

Barnes Drill Co.:
Honer for heavy stock removal, cylinder liners, IE, 5/6, p.147
Index unit automatic, IE, 4/15, p.138
Three-way Barnesdril machines motor frames, IE, 1/28, p.108

Barr Mfg. Corp.:
Buys Kent Corp., B, 6/3, p.35

Basic Industries Inc.:
Hot forming press for exotic metals, IE, 3/11, p.112
Press features close temperature control, 3/4, p.33

Basic Products Corp.:
Buys Davenport Mfg. Div., 4/1, p.28
Buys Lindberg Engineering, 1/7, p.33
Dudley Seay takes firm from malt to metallurgy (cover), 3/4, p.51
Punch cards regulate heat treat process, IE, 3/25, p.198

Batten, Barton, Durstine & Osborn Inc.:
Brower: Appraisal of industrial leaders, 1/21, p.82

Battronic Corp.:
Makes battery powered truck, 4/8, p.96

Bausch & Lomb Inc.:
Builds ruling engine to produce scales and grids, 4/22, p.17
Fiber optics inspection tool, IE, 6/24, p.129
Gets ready for optical measuring (precision scales), 5/20, p.60
Optical gage measuring device, IE, 1/28, p.110
Zoom optical system on bench metallographs, IE, 5/27, p.153

Bean & Co., Morris:
Builds second foundry, Cedarville, O., 5/27, p.31

Bear Mfg. Co.:
Balancing machine has correcting drill press, IE, 4/22, p.220

Bell Telephone Laboratories:
Computers fail in library use, Pierce reports, 4/15, p.20
Fasteners, vibration tests, 6/10, p.102
How to get reliable percussive welds (James Coyne), 6/3, p.70
Magnetic field enables twist wave of ultrasonic energy, 1/21, p.20
Pure research too expensive: Morton asserts, 5/13, p.18
Telephone switch system, microsecond, 2/11, p.118
Thermometer-quartz, sensitive, 6/3, p.29

Bellows-Valvair:
Captive foundry-mechanization, cuts reject rate on castings, 2/25, p.50
Switch reactor pin on in-line valves, fail-safe feature, IE, 3/11, p.117

Bemol Inc.:
Lubricant powdered tungsten disulfide, for extreme temps, IE, 6/3, p.110

Bendix Corp.:
Closed circuit TV operates in dark, IE, 2/25, p.114
N/C positioning on turret drills, IE, 6/10, p.184

Bethlehem Steel Co.:
Automated process speeds order entry, 4/8, p.63
Bar mill, 8 in. called 'Pacesetter', new at Johnstown, Pa., plant, 6/3, p.33
Burns Ditch, Ind., plant goes ahead despite Sen. Douglas dispute, 2/25, p.31
Burns Ditch contract to Swindell-Dressler, 4/1, p. 19
Burns Ditch contracts (firms), 5/20, p.33
Dumping charge (Japan), 2/11, p.18, refuted by STEEL, 2/25, p.18
Sparrows Pt.: Carbon bottom 'K' blast furnace, pic., 5/6, p.35
Sparrows Pt.: Scrap baling press, 1/28, p.32
Sparrows Pt.: Thin tin mill, 3/18, p.33
Steel casting—turbine impulse runner, 5/20, p.35
Weikel: Invites research projects, 6/10, p.27
Wire coils, 5000 lbs., 2/25, p.66

Big Joe Mfg. Co.:
Platform lift truck self-propelled, IE, 6/24, p.138

Black & Decker Mfg. Co.:
Buys factory, England, B, 5/27, p.33

Blanchard Machine Co.:
Sludge removal in surface grinder, IE, 5/20, p.117

Blaw-Knox Co.:
Charing machine cuts open hearth load cycle, 2/4, p.44
Merges functions into Buflovak Div., B, 6/10, p.35
Scrap charging machine (Rapicharger), IE, 1/14, p.102

Bliss Co., E. W.:
Buys government facilities, Canton, B, 5/20, p.35
Canmaking equipment has horizontal rotary parting machine, IE, 1/7, p.307
Cold reducing mill-stainless sheet contract for J & L, 4/22, p.31
Cold reduction mill shipped to Philippine Islands, 5/13, p.35
Dynapak purchase from General Dynamics, bid, 1/14, p.22
Dynapak bid withdrawn, 1/28, p.31
Reversing mill for Australia, B, 2/18, p.33
Tin temper mill for Nippon Kokan, 4/8, p.28
Stamping press, high speed (refrigerator fins), 2/25, p.54
To make Lombard drawbenches (tube and bar), 2/25, p.31

Bliss & Laughlin Mfg. Co.:
Buys Belmont Mfg., B, 1/14, p.28

Bliss & Laughlin Inc.:
Robbins blasts gov'ts lack of fiscal responsibility, 3/18, p.180

Boeing Co.:
Fuel tank linings oven cured, 4/1, p.28
Polarized light reflecting from plastic coating (rainbows) predict stress patterns, 3/25, p.18
Strike deadline, union shop issue, 1/14, p.23
Wood (Aero-Space Div.): Man on moon would stimulate business, 4/29, p.27

Booz, Allen & Hamilton:
R&D management programs bog down, 3/4, p.51
Stolle: Use PERT for marketing problems, 1/7, p.158

Borden Metal Products Co.:
Buys Blair Tool, B, 4/1, p.28

Borg-Warner Corp.:
Plastic injection moldings size of refrigerators, Marbon Chemicals Div., 5/27, p.94
Ultrasonic cleaner (auto valve bodies), 2/4, p.40

Bostrum Corp.:
Buys Steelex, B, 5/20, p.35

Botfield Refractories Co.:
Graphitic refractory resists thermal shock, IE, 5/6, p.140

Bowles Engineering Corp.:
Plastic logic components formed photographically, 1/21, p.46

Boxton-Beel Inc.:
Reflectors for tracing satellites, 6/10, p.103

Braeburn Alloy: See Continental Copper

Brane Corp.:
Arrow drilling, milling machine, tape control, IE, 2/25, p.113

Branson Instruments Corp.:
Cover: Branson with tools of ultrasonics, 5/6, p.62

Bridgeport Brass Co.:
Cladmetal Div., brazed honeycomb panels for commercial use, 2/25, p.56

British Iron & Steel Corp, Ltd.:
Moves N. Y. offices, B, 5/13, p.35

Broken Hill Pty. Ltd.:
Continuous steelmaking pilot unit, 6/3, p.64

Broun Engineering Co.:
Cold extrusion pays off, 5/20, p.54

Brown & Sharpe Mfg. Co.:
Computer slashes tape preparation time, 4/22, p.137
Lease plan for machine tools with purchase option, 2/4, p.53
Transistorized electronic gages, IE, 2/18, p.115
Turret drilling machine line, IE, 5/6, p.139
Visual aid added to grinder, IE, 1/7, p.306

Brumley-Donaldson Co.:
Statements on Japanese steel dumping, 1/7, p.28

Bryant Chucking Grinder Co.:
Center hole grinder, IE, 4/1, p.113

Buck & Associates, Carl:
Rubber lined pumps move hot acids, IE, 1/7, p.316

Buck Tool Co.:
Mandrel excels in holding precision, IE, 4/22, p.224

Budd Co.:
Automotive Div., $15 million investment, 3/11, p.31
NC on drilling truck wheel hubs, 4/1, p.20

Buhr Machine Tool Co.:
Handling setup for drilling diesel engine cylinder block, IE, 6/3, p.110
One machine for four parts (dial machine), 2/18, p.59

Bunell Machine & Tool Co.:
Fixtures handle huge weldments, IE, 1/28, p.114
Sold, B, 6/3, p.35

Burgmaster Corp.:
Bed type turret drill tape controlled, IE, 1/14, p.93
Eight spindle unit drills, bores, taps, IE, 6/10, p.190
Turret drill, 12 spindles, IE, 5/20, p.107
Twist drill tape controlled, IE, 5/6, p.140

Burndy Corp.:
Forms Burndy-Japan Ltd., B, 5/13 p.35

Bushman Material Handling Mfg.:
Grab positions big machined parts, IE, 1/28, p.111

C

CBS Laboratories:
Automated electron beam to make microcircuits, 4/8, p.73

Cabot Corp.:
Garnet material used for tumbling media, 2/25, p.20

California Spring Co. Inc.:
Tiny spring for electronic computers, TO, 5/6, p.20

Calumet & Hecla Inc.:
Wolverine Tube adds vacuum tube furnace, 1/14, p.28

Cambridge Wire Cloth Co.:
Light load processing belt, IE, 3/18, p.194
Metal mesh strapping, IE, 6/3, p.117
Nickel metalmesh belting, IE, 6/17, p.134
Self-releasing sling cuts rigging time, IE, 4/1, p.115

Camcar Screw & Mfg. Co.:
Carlson (cover), cold forming process, 5/20, p.49
Raycarl process, cold forming-extruding fasteners, 5/27, p.83

Cameron Iron Works Inc.:
Vacuum arc remelt furnaces (superpurity alloys for aerospace), 6/10, p.109

Canadian Acme Screw & Gear Ltd.:
Hydraulic drives for power transmission, TO, 5/20, p.20

Capital Products Corp.:
Read Standard: Control accuracy on welding positioners, IE, 6/3, p.114

Carbide Metals Co.:
Adjusts prices on some chromium alloys, 2/4, p.57

Carborundum Co.:
Blows steam against molten ceramic to make refractory fibers (cover), 1/14, p.34
Buys assets of Pangborn, 3/25, p.35

Careers Inc.:
Engineers rate industry over government career, 4/15, p.18

Carlton Machine Tool Co.:
NC machine bores, drills, taps, mills, IE, 1/21, p.87 and 4/8, p.115

Carpenter Steel Co.:
Alloy for nuclear service, Pyromet 600, 6/10, p.145
Stainless wire formed with Oxalate lube coating, (Flexcote), 6/17, p.76
Tests corrosion rates of resistant alloys in heat transfer equipment, 4/8, p.64

Carter Products Inc.:
Thermoelectronics, temperature problems, 2/25, p.59

Caterpillar Tractor Co.:
Sales record, 45% overseas, 4/22, p.207
Tooling system (Insta-Set) solves short run problems, 6/24, p.72

Castle & Co., A. M.:
Installs rotary surface grinder, B, 5/20, p.33

Cayuga Machine & Fabricating Co. Inc.:
Photoelectric guidance system, IE, 3/8, p.200
Welding positioner, manipulator exhibited, IE, 4/15, p.134
Welding head manipulator, IE, 6/17, p.133

Central Foundry Co.:
Pipe and fittings guaranteed for 100 years, 4/29, p.19

Central Metal Products Co.:
Machinable carbide, 5/27, p.96

Centre Circuits Inc.:
Spray etcher, IE, 5/13, p.160

Ceramics for Industry:
Ceramic-metal bond, 3/18, p.111

Cessna Aircraft Co.:
Double production by changing grade of carbide tooling, 2/11, p.120

Champion Spark Plug Co.:
Buys Magnaflux, B, 6/24, p.35

Chance Vought Corp.:
Deep drawing of refractory metals, experiment, TO, 6/24, p.20

Chatillon & Sons, John:
Merges United Aero Products, B, 1/28, p.32

Chemetron Corp.:
National Cylinder expands facilities, 1/14, p.28
NCG Mig welding gun, nozzle water cooled, IE, 3/11, p.115

Chicago Bridge & Iron Co.:
Giant steel trifurcation for project, 2/18, p.35

Chicago Mold Engineering Co. Inc.:
C.O.S.T. marketing campaign of Scully-Jones, 4/8, p.60

Chicago Rivet & Machine Co.:
Automatic riveter, IE, 3/18, p.196

Chromalloy Corp.:
Carbide forms easily, wears hard, 1/28, p.48
Steel bonded carbide, IE, 4/22, p.220

Chrysler Corp.:
Adhesive for brakelinings, TO, 3/18, p.20
Administrative reorganization; Chrysler makes comeback, new developments, 2/4, p.75
Answers R&D critics, 6/24, p.111
Buys controlling interest in Simca, 2/4, p.75
Capital investments, 4/8, p.96
Dodge Truck's Tomkins: Cargo trailers, bus 'trains', fly and float, 5/20, p.92
Drawing compound "Cycledraw," dev. at stamping plant, 6/10, p.31
Moon car-power liquid hydrogen, oxygen, 1/21, p.18
New Yorker Salon luxury car, pic., 2/4, p.76
Overseas program, 4/22, p.17
Pension changes faced in labor pact, 6/10, p.161
Townsend: Urges positive business leadership, 5/13, p.18
Trenton engine plant—'practical' machining pays off, 3/25, p.169
Turbine engine announced, 5/6, p.121
Turbine tests, 5/13, p.138
Turbine engine (pic), consumers to help decide future, 5/20, p.29

Cincinnati Lathe & Tool Co.:
Cintimatic No. 3, multifunction machine on modest budget range, IE, 5/13, p.156
Horizontal mill challenges foreign, used machinery sales, IE, 2/25, p.116
Low cost horizontal milling machine (builder Whitney), 2/13, p.28

Cincinnati Milling Machine Co.:
AF contract to study 'chatter' in machines, 4/8, p.27
ASTME Show, three machines displayed—Hydroform, Electrojet, hydrospin lathe, 4/1, p.109
Climb milling, TO, 5/20, p.20
Grinder has several functions, IE, 4/29, p.102
Hot machining process, 6/17, p.28
Hydroform machine for Ford, 2/11, p.92
NC unit 'Acramatic Hundred,' 4/8, p.121
Open side machine mills big parts, IE, 4/8, p.116
Uses of tooling materials (cover), 4/22, p.97

Cincinnati Milling & Grinding Machines Inc.:
Shear spinning operations, 1/21, p.34

Cincinnati Sub-Zero Products Inc.:
Unit treats materials at low temps., IE, 4/22, p.224

Clair Mfg. Co.:
Finishing machine versatile, IE, 2/25, p.113

Clark Controller Co.:
Static controls, IE, 1/21, p.93

Clark Equipment Co.:
Load Glide Air - In - Floor, compressed air pallet for loading van, 3/25, p.81
Stick control on Omni-Drive vehicle, 1/28, p.88

Clark Mfg. Co.:
Buys Reliance Gauge, B, 4/8, p.28

Cleveland-Cliffs Iron Co.:
Pellets self - fluxing, Marquette mine, 3/4, p.62

Cleveland Instrument Co.:
Gaging system-typewriter readout, IE, 1/28, p.108

Cleveland Metal Abrasive Co.:
Buys Harrison Abrasive Div., B, 3/18, p.35

Climax Molybdenum Co.:
Builds research lab at U. of Mich., 5/6, p.89

Clinton Engines Corp.:
Modernization program, B, 3/11, p.35

Clow & Sons Inc., James:
Contracts for Venezuelan waterworks, 1/21, p.30

Coilfeed Systems Inc.:
Seven station coil processing line (England), knocked down for shipment, 4/29, p.30

Colonial Pipeline Co.:
Laterial pipeline contract, 1/21, p.57
Consolidates Pacific Coast facilities, B, 6/10, p.35
Eastern operations concentrated at Roebling plants, closes Wickwire Spencer plant, Buffalo, 6/17, p.33
Eastern sales consolidated at Trenton, 5/6, p.35
Eddy current detects flaws in pipe coupling, 6/3, p.68
Parallel wide flange beams rolled at Pueblo, 2/4, p.28

Columbia Marking Tools:
Bar stock marking tool, IE, 4/1, p.117

Columbus Bolt & Forging Co.:
Sold, B, 1/21, p.29

Colvilles Ltd.:
Gaugemeter on hot strip mill, 3/11, p.62

Combustion Engineering Inc.:
Buys Refractory & Insulation, 6/24, p.35

Commercial Filters Corp.:
Coolant Clarifier, 6/10, p.117

Concast Inc.:
Agreement discussed with Sendzimir to offer equipment combinations, 1/14, p.27
Continuous casting unit, horizontal rather than vertical, 6/3, p.27
Breakthrough in continuous casting (horizontal machine instead of vertical), 6/17, p.71
National Steel, lone-third stockholder, 5/20, p.33

Congress Tool & Die Div.:
See Tann Corp.

Consolidated Aluminum Corp.:
Aluminum reduction plant, Tenn., 2/18, p.33

Consolidated Edison Co.:
Pipeweld for cable insulation, 5/13, p.82

Consolidated Electrodynamics Corp.:
Quality problems resu't early in manufacturing process, 6/17, p.20

Continental Copper & Steel Industries Inc.:
Braeburn Alloy expands, B, 1/28, p.32

Continental Machines Inc.:
Hydraulic power units ready for reservoir, IE, 1/4, p.95

Continental Screw Co.:
Stud rolls threads (Holtite Taptite), IE, 4/8, p.116

Contract Mfg. of Texas Inc.:
Formed, B, 5/27, p.33

Cooper Weymouth Inc.:
Coil stock reel (largest), IE, 2/11, p.187
Stock reels with coil support arms-hydraulic, IE, 1/7, p.304

Copeland Refrigeration Corp.:
Heald Bore-Matics means process flexibility, 2/4, p.41

Copperweld Steel Co.:
Expands facilities, Ohio Seamless Tube, 3/25, p.35

Corbin-Farnsworth Inc.:
Precision control on microwelder, IE, 5/27, p.148

Cousino Metal Products Co.:
Gold forming process, 5/20, p.52

Covel Mfg. Co.:
Handfeed grinder, power assist, IE, 5/27, p.150

Creative Products Inc.:
Precision optical detector, IE, 3/4, p.120

Crescent Niagara Corp.:
Buys tool div. of Barcalo, B, 3/18, p.35

Crest Ultrasonic Corp.:
Multifrequency concept on ultrasonic cleaner makes cleaning uniform, IE, 3/18, p.199

Cross Co.:
Electric indexing mechanism, IE, 6/3, p.119
Transfer line processes V-4 cylinder blocks, IE, 1/28, p.113
Working fixture on dial machine, IE, 6/3, p.110

Crucible Steel Co. of America:
Price increase on tool steels turned down, 5/6, p.19

Curry Air Shear Corp.:
Portable air operated shears, IE, 6/24, p.136

Curtis Mfg. Co.:
Buys Bunell Machine & Tool, B, 6/3, p.35

Cutler-Hammer Inc.:
Numerical control positioning system on press, 3/4, p.57

D

Dahlstrom Machine Works Inc.:
Coil peeler, IE, 6/3, p.116
Runout, measuring table doesn't scratch, IE, 2/18, p.111

Damascus Tube Co.:
Cold formed (Flow-Rol) precision tubing in steel and nonferrous metals, 1/21, p.42

Deere & Co.:
Savings with gas-metal arcwelding, 6/24, p.68

De Havilland Aircraft of Canada Ltd.:
Stainless tubes coiled flat for storage, 4/1, p.52

De Laval Turbine Inc.:
Low capacity pump for general purpose, IE, 5/20, p.114

Delta Sonics Inc.:
Ultrasonic vapor degreaser, IE, 6/10, p.180

Del-Vac Engineering:
Vacuum system works on testing, production, IE, 4/22, p.227

Demag A. G.:
Builds rotor furnace for South African plant, 4/15, p.74

Denison Engineering:
See American Brake Shoe Co.

Dennison Mfg. Co.:
Dial-Set tag marking unit, 1/28, p.49

Denver Equipment Co.:
Improvements added to crushing rolls, IE, 1/7, p.312
Rubber lined pump handles 4-26 gpm range, IE, 1/7, p.320

Detroit Broach & Machine Co.:
Broaching tech. pays off, 6/3, p.57
Positioner pares scrap, reworking, IE, 6/17, p.127
Von Reis: Machines not up with science, 4/15, p.124

Detroit Edison Co.:
Electric power generation, computer control, 4/22, p.31

Detroit Hoist & Machine Co.:
Hoist handles lances in open-hearth, IE, 6/24, p.133

Detroit Steel Corp.:
Expanding at Portsmouth, 3/25, p.35

Detroit Tap & Tool Co.:
Universal thread roll attachments, IE, 1/7, p.319

Detroit Testing Laboratory Inc.:
Product diversification aid plan (DTL), 2/25, p.30

DeVilbiss Metal Fabricators Co.:
Power spray washing system, Midwest firm, 4/1, p.43

De Vlieg Machine Co.:
Electronic control for Spiramatic Jigmills, IE, 1/4, p.102
Forms German sales subsidiary, 1/28, p.31
Improvements in Micropoint tool grinder, IE, 4/8, p.121

DeWalt Inc.:
Metal cutting machine, IE, 4/1, p.116

Diamond Machine Co. Inc.:
Cutting fluid multipurpose (sulfurized mineral lard), 2/4, p.40

Diebold Group Inc.:
At NMTBA meeting: Customer needs should dictate your business, 5/6, p.29

Diehl Mfg. Co.:
Buys Air Marine and Motordyne, B, 1/14, p.28

Digitronics Corp.:
Dial-o-verter, data over telephone, 2/25, p.63

Ditto Inc.:
Design boosts sales, 5/13, p.71

Diversified Wire & Steel Corp.:
Buys Thermo Air Products, B, 6/10, p.35

Dixon Corp.:
Thermoplastic resins blended with Teflon, (Meldin A), 4/8, p.117

Dixon Automatic Tool Inc.:
Modular control system applied to transfer machine, IE, 3/18, p.194
Standard components for machine construction, IE, 5/13, p.160

DoAll Co.:
Band machine for contour sawing large workpieces, IE, 3/11, p.115
Bandsaw blade diamond edged, IE, 3/18, p.198
Five scales on gaging equipment, IE, 3/25, p.194

Dodge Mfg. Corp.:
Flexible coupling is spacer for pumps, IE, 5/13, p.159
Friction clutches for low hp, IE, 5/20, p.114

Dodge National Corp.:
Formed with mergers, B, 6/3, p.35

Doehler-Jarvis: See National Lead

Dollar Electric Co.:
Resistance welding gun-transformer, IE, 2/25, p.118

Dorr-Oliver Inc.:
FluoSolids drying system for sand recovery plants, IE, 6/17, p.128

Douglas Aircraft Co.:
DC-9 launched (civilian jet), 4/5, p.29
DC-9 market estimate through 1957, 5/6, p.92
DC-9 financing, subcontractors join in plan, 5/20, p.31
Spacecraft simulation unit tested, 2/11, p.18
Tape controlled machine makes 5 parts at one time, 3/18, p.33

Douglas & Lomason Co.:
Buys Superior Atlanta, B, 1/14, p.28

Dow Chemical Co.:
Cold cleaning solvent, how toxicity, IE, 3/18, p.188
New gas dev. for flame cutting, 4/15, p.79

Drillmation Co, Inc.:
Bore drilling, 5/27, p.94
Tape controlled bore drill, IE, 1/7, p.303

Driver-Harris Co.:
Cobalt foil-magnetic, TO, 4/15, p.20

Drott Mfg. Corp.:
Traveling crane, self-propelled, IE, 5/20, p.108

DuCas Corp.:
Fluid transfer gland, design pares costs, IE, 5/13, p.162

Ducommun Inc.:
Option to acquire Explosive Technology, B, 5/20, p.35

Duff-Norton Co.:
Plans move of executive offices to Charlotte, 2/15, p.32

Duncan Products Inc.:
Glass bead peening-metal parts, 6/10, p.108

Dunlop of Canada:
Develops lightweight rubber (EPT), 2/4, p.53

Dunn Steel Products: See Townsend

Du Pont de Nemours & Co, Inc., E. I.:
Bids for stainless market (auto trim), 3/18, p.25
Nickel sheets marketed, 4/8, p.26
Work on tungsten sheet fabrication, 3/4, p.20

Dynasonic Corp.:
Ultrasonic cleaner-small jobs, IE, 1/7, p.315
Ultrasonic vapor degreaser, IE, 6/3, p.119

Dyna-Therm Chemical Corp.:
Saturn camera coatings protect on blastoff, 4/22, p.20

E

Easco Products Inc.:
Electrical discharge machining, IE, 3/4, p.123

Eastern Rolling Mills Inc.:
Hydrostatic bearing uses high viscosity lubricant, 5/20, p.71

Eastman Kodak Co.:
Dimensions more stable on thick base films, IE, 1/14, p.100

Eaton Mfg. Co.:
Drives, lubrication systems dev., IE, 5/20, p.111
May buy Dole Valve, B, 1/28, p.32
Merger proposal with Yale & Towne, 4/8, p.28

Eco Engineering Co.:
Centrifugal pump electrically heated, IE, 1/7, p.320
Moves into ultrasonics market, 5/6, p.67

Eddy-Rucker-Nickels Co.:
Productivity rise offsetting wage hikes? (table), 4/1, p.22

Edgcomb Steel Co.:
Buys Brookfield Wire, B, 2/18, p.35

Edlund Machinery Co.:
Drilling machine control system, IE, 3/4, p.115
Tool changes fast on N/C unit, IE, 1/7, p.310

Electra Corp. (former Electric Autolite):
Merges with Mergenthaler Linotype, B, 5/20, p.35

Electric Products Co.:
Buys Elliott Crocker-Wheeler, B, 2/4, p.28
Refinements in motor series, IE, 2/11, p.190
Silicon controlled rectifiers, size cutters, IE, 6/17, p.127

Electric Regulator Corp.:
Solid state drives, IE, 3/18, p.194

Electric Storage Battery Co.:
Battery charge increases power, IE, 4/1, p.114

Electromatic Inc.:
Clutch-brake drive, IE, 2/18, p.114
Retaining rings ease assembly of transmissions, 5/13, p.72

Electron Heating Corp.:
Electron beam furnace 6000° F, IE, 1/14, p.99

Electro-Nite Inc.:
Automated control for continuous casting machines, 6/3, p.27

Electro Powerpacs Inc.:
Laser equipped with 5000 volt supply, IE, 5/6, p.150

Elgin National Watch Co.:
Reliability center, TO, 5/27, p.20

Elgin Tool Works Inc.:
Redesigned precision lathe and hand screw machine, IE, 5/13, p.158

Elox Corp. of Michigan:
EDM grinder of intricate carbide shapes, IE, 5/6, p.152
EDM improvements, IE, 6/10, p.190

Elwell-Parker Electric Co.:
Fork lift truck, 8000 lb loads, IE, 6/24, p.135

Engelhard Industries Inc.:
Expands facilities, B, 1/14, p.28

Engineered Equipment Inc.:
Jetliner (gun unit) for truck, IE, 2/11, p.186

Enthone Inc.:
Black oxide coat on iron-steel, IE, 1/7, p.320
Cadmium brightener for barrel plating, IE, 2/11, p.184
Zinc plating solution, IE, 4/8, p.118

Epoxy Products Inc.:
Flexible epoxy solder shields ribbon circuits, IE, 6/24, p.132

Epps Industries:
Expands steel tubing mill, 4/29, p.28

Erie Foundry Co.:
Buys Hammer Div., B, 6/10, p.35
Press capacities, 100-800 tons, IE, 2/25, p.117

Everett Industries Inc.:
Abrasive cutoff unit, IE, 2/4, p.98

Everite Machine Products Co.:
600 ampere unit powers electrolytic grinder, IE, 6/24, p.129
In-the-field conversion to electrolytic tech. for tool and cutter grinders (Everite Kit), 4/29, p.104

Evinrude: See Outboard Marine

Ex-Cell-O Corp.:
Cabinet type power supplies for EDM for Lectra-Form machines, IE, 5/6, p.142
Cylinder boring accuracy, IE, 1/21, p.88
Double setup machine carries identical tooling, 2/11, p.184
Electrical discharge tools, IE, 4/8, p.119
Recirculating linear ball slides, IE, 4/1, p.111
Special finishing machine, IE, 5/27, p.144

Expert Inc.:
Cam controlled unit welds irregular contours, IE, 2/4, p.97

F

Fabricast Mfg. Co.:
Buys Giffrick Dock, B, 6/10, p.35

Fafnir Bearing Co.:
German subsidiary, B, 2/18, p.35
Northern Ireland facilities, 3/18, p.35
Rubber bearing cartridge for conveyor rolls, IE, 2/11, p.185

Falk Corp.:
Packaged drive, range of variable speeds, 4/1, p.110
Schneider to get AGMA's award, 5/13, p.35

Falstrom Co.:
Spotwelding gun, IE, 5/20, p.112

Famco Machine Co.:
Hydraulic press, 3-ton, IE, 1/7, p.319

Fansteel Metallurgical Corp.:
Award winners for NJZ competition, 4/15, p.31
Belgian joint venture, 5/6, p.130 and 1/28, p.32
Combines subsidiaries into Metalworking Products Group (Vascoloy-Ramet, Wesson), 5/6, p.35

Farr Co.:
Portable clean bench, 4/1, p.112

Farrel Corp.:
New name for Farrel-Birmingham, B, 4/22, p.35

Farrel-Birmingham Co. Inc.:
Licensed for German presses, 2/18, p.35

Federal-Mogul-Bower Bearings Inc.:
National Seal uses ultrasonic burglar alarm, 2/4, p.20

Federal-Warco: See McKay Machine

Feedall Inc.:
Feeder automatic (aluminum discs into extrusion press), IE, 6/3, p.119
Feedall model, furnaces, IE, 6/17, p.134

Fenn Mfg. Co.:
Hydraulic feed for long die swaging, IE, 3/18, p.188

Ferguson Machine Co.:
Explosion proof clutch-brake-motor package, IE, 2/4, p.121

Fife Mfg. Co. Inc.:
Center and edge guide unit, IE, 2/4, p.100

Finkl & Sons Co., A.:
Licenses English firm, vacuum degassing in-ladle process, 6/24, p.35
Preset cycle controls forge press, 4/15, p.73

Firestone Steel Products Co.:
Shear spinning makes auto wheel, 1/21, p.33

Fisher Scientific Co.:
Electron probe x-ray microanalyzer, IE, 6/17, p.134

Flick-Reedy Corp.:
Air valve development (33 components do job of 1460 valves), 5/13, p.80

Floating Floors Inc.:
Diecast aluminum floating floor plate, 5/27, p.26

Ford Motor Co.:
Aeronutronics Div. transferred to Philco, 6/24, p.112
Bogart: Cold forming process, 5/20, p.50
Builds bearing plant in Puerto Rico, 3/11, p.31
Car sales (new and used) forecast by Iacocca, 2/18, p.19
Car sales 7 million, three years in a row, predicts Wright, 4/15, p.17
Concept of car marketing (variety of cars), needs new model for Class IV, 2/4, p.76
Corrosion study, antirust materials and coatings, 1/14, p.76
Denise: Collective bargaining will never be easy, 4/1, p.100
Electronic die finisher, 4/15, p.114
Fairlanes roll off assembly line (cover pic), 6/24, p.62
Gas turbine for military use, 3/18, p.117
Hydroforming rear lamp housings from aluminum, 2/11, p.92
Laser beam for studying combustion, 4/29, p.18
Lawson: Technology needs more than college degrees, 3/25, p.180
Monaco showing of 1963 model cars, 1/14, p.75
Mustang development, 2/18, p.92
Quality capability studies for machine tools, and equipment, 5/13, p.137
Shelby Cobra, pic., 6/24, p.112
Spray painting plant ordered from Swedish firm for Lisbon, Portugal, plant, 4/8, p.69
Taconite pellet plant, Minn., hinges on tax action, 3/4, p.30
Turbine engines on the way, 5/6, p.121

Form-All Corp.:
Press brake forms without dies, 6/3, p.57

Formsprag Co.:
Centrifugal clutch line improved, IE, 1/14, p.104
Clutch wear, versatility improved models, IE, 4/29, p.98

Fostoria Corp.:
Chempump models, IE, 1/21, p.92

Fox Grinders Inc.:
Snag grinder for foundry castings, IE, 6/10, p.189

French Enterprises Inc.:
Ballizing process for hole finishing, 4/8, p.59

Fruehauf Trailer Co.:
Aluminum mill, Ala., joint venture, 3/11, p.33

Fry & Associates, George:
Dick: Take a hard look at small account and small order problem, 1/7, p.161

Fuji Iron & Steel Co.:
Hirohata Works unveiled, 6/10, p.169
Nagano: Idea swap essential for world trade, 2/25, p.104
Nagano (president) elected head of Japan Iron & Steel Federation (pic), exclusive interview, 5/20, p.99

Fuller Co.:
Airveyor transfer units carry materials, IE, 2/4, p.97

Fusion Engineering Co.:
Automated brazing for 'nonfreeze' water valves, 2/25, p.49
Paste applicator, faster brazing, soldering, IE, 4/29, p.100

G

Gabriel Co.:
Sells Gabriel Valve, B, 5/20, p.35

Gallmeyer & Livingston:
Series of precision surface grinders, IE, 1/21, p.89

Gar Wood Industries:
Individual hydraulic drive, 3/4, p.20

Gardner-Denver Co.:
Small part packaging simplified, 4/8, p.58

Gardner Machine Co.:
Double disc grinder, IE, 1/21, p.88

Gaynes Engineering Co.:
Incline-impact tester, IE, 1/7, p.311

General American Transportation Corp.:
Manipulator for 35 ft welds, 1/28, p.49

General Cable Corp.:
Ingot preheat melting furnaces conveyorized, 6/24, p.84

General Dynamics Corp.:
Dynapak line may be purchased by Bliss, 1/14, p.22
Dynapak purchase offer withdrawn, 1/28, p.31
Magneform machine, electromagnetic force, IE, 5/13, p.157
Dr. Pidd addresses power conference (converting direct heat to power), 4/8, p.67
Rene 41, heat resistant alloy can be machined, 2/25, p.56

General Dynamics/Astronautics:
Alloys take cold (minus 423° F), TO, 6/3, p.20
Data retrieval system (lists venders), 5/6, p.87

Code: B—*Briefs;* IE—*Industrial Equipment;* TO—*Technical Outlook*

How a supplier is picked, 6/10, p.94
Space train sketched by artist (STEEL cover), 6/10, p.92

General Dynamics/Convair:
Bonding tape (rejected) reclaimed for forming material, 6/24, p.81

General Electric Co.:
Ceramic-Lucalox developed, 2/25, p.19
Ceramic-Lucalox, offers electrical resistance, 3/4, p.56
Clover: Broader maintenance skills needed, 6/17, p.84
Computers sell engineering services, 1/21, p.82
Computer service at Phoenix for small firms and government agencies (Information Processing Business), 3/4, p.69
Cryogenic refrigerator runs four years, 2/18, p.20
Flight propulsion lab controls environment of big machining facility, 4/22, p.18
Fuel cell-hydrocarbon, use potential, 4/29, p.28
Fuel cell operates on natural gas, 1/21, p.28
Gecent postprocessor speeds tape contouring, 1/14, p.40
High pressure electric discharge lamps, TO, 6/10, p.20
Jet engine nozzle area—plastic plus ceramic, 4/15, p.76
Laser units (solid state), 1/28, p.20
Lubricant for working with aluminum, 1/28, p.30
Magnets dev., no recharge, 2/4, p.20
Manufacturing men (Beardslee) report equipment needs at NMTBA, 5/20, p.69
McAleer: How purchasing agents can make standards pay off, 3/11, p.28
McCune: Business incentives need booster, 4/15, p.124
Motor 18% shorter, lighter, 3/25, p.189
Refractory metals plant dedicated in Cleveland, facilities and production, 5/13, p.31
Silicone rubber, easy pouring, IE, 3/18, p.196
Steam generator rotor for TVA, 6/10, p.35
Suits addresses AISI: Behind in metals research, 5/27, p.24
Suits: Competition sparks technology, 2/4, p.86
Superconducting coil-magnetic with field of 100,000 gauss, 6/10, p.17
Synchronous motor uses solid state devices, IE, 2/25, p.121
Vacuum Products Operation formed, 5/13, p.27

General Machine Products Co. Inc.:
Buys Philadelphia Hoist Div., 4/1, p.28

General Motors Corp.:
1962 earnings all-time record, 2/4, p.23
AC Spark Plug: Magnesium die-casting uses, 5/20, p.91
Agency shop agreement with UAW, Indiana plants, 6/24, p.112
Antitrust probe (Mirrors of Motordom), 5/27, p.125
Barr: Looks at future engineering, 4/1, p.89
Chevrolet's new lines for '64, 4/22, p.199
Chevrolet to use more nodular iron, 3/18, p.169
Chevrolet expands Tonawanda plants, 5/20, p.92
Chevrolet wheelbase built in Buick - Olds - Pontiac assembly plants, 6/10, p.18
Corvair (Chevy) revamped, 6/24, p.111
Diecaster (giant) purchased, 4/29, p.29
Fisher Body (Jack Ogden): Expert evaluates three resistance weld advances, 2/25, p.52
Modernizes assembly plants, 2/4, p.23
Noise and vibration lab, 1/7, p.281
Saginaw Gear extrusion process, 5/20, p.51
Sled simulates auto crashes, safety test, 3/25, p.170
To stockpile extra steel, boost capital spending, 2/25, p.26

General Precision Inc.:
Magnetic memory computer for small businessman, 4/1, p.19

General Telephone & Electronics Corp.:
Crystalline converts electricity into red light, 2/18, p.20

Geophysics Corp. of America:
Forms Vactak subsidiary, B, 5/27, p.33
Mass spectrometer for microsurface analysis, IE, 1/21, p.93

Gero Metallurgical Corp.:
Vacuum process licensed in Germany, 4/29, p.54

Giddings & Lewis Machine Tool Co.:
Bendix solid state control on drilling machine, IE, 2/25, p.114
Cassady: 1963 machine tool sales forecast, 4/1, p.18
Continuous feed heads can bore and face, IE, 4/22, p.222
Enlarges to produce numerical controls, 4/29, p.29
Foreign built tools sold here, 3/4, p.29
Horizontal boring, units, improvements, IE, 6/24, p.132
'Instant' delivery, market-anticipation program, 4/8, p.25
Machine heads work independently, IE, 5/6, p.152

Gillette Co.:
Makes stainless razor blades, 5/27, p.109

Gisholt Machine Co.:
ABC lathe, short run work, IE, 5/27, p.143
Automatic threading lathe, IE, 3/11, p.111

Goodrich Co., B. F.:
Ashe: Corporate profit plague weakens consumer spending, 1/21, p.17

Goodyear Aircraft Corp.:
Transportable tracking antenna built for SYNCOM satellite, 2/4, p.53

Goodyear Tire & Rubber Co.:
Jumbo hydraulic press (hot platen type) for precision layup forming, IE, 6/3, p.112

Gordon Co., Claud S.:
Tiny thermocouple, mineral insulated, IE, 2/11, p.184

Gorton Machine Co., George:
Vertical mills, pantograph machine, IE, 3/18, p.187

Goss Gas Inc.:
Exhibits torch, torch handles, regulators, IE, 4/15, p.137

Graham Transmissions Inc.:
Built-in motor part of variable speed drive, IE, 4/1, p.114

Granite City Steel Co.:
Sendzimir roll grinder advantages, 1/28, p.49

Gray Co., G. A.:
Separate tables on machine tools cuts idle time, IE, 3/18, p.199

Green Fire Brick Co., A. P.:
Buys Illinois Clay, B, 3/25, p.35

Greer Stop Nut Co. Inc.:
Sold, B, 6/3, p.35

Gregory Industries Inc.:
Nelson studwelding spatter eliminated by Tranquil-Arc, IE, 3/11, p.111
Nelson Stud Welding exhibits, IE, 4/15, p.135

Gripall Corp.:
Coil lifters, special load mechanism, IE, 5/6, p.149

Grove Valve & Regulator Co.:
Valve welding in shop saves pipeline costs, 3/4, p.72

Gulf Oil Corp.:
Roll oil for bright, clean strip, IE, 3/4, p.119

Gulf States Land & Industries Inc.:
Montana plant (near Anaconda) hits problems, 2/11, p.29

H

Hallicrafters Co.:
Microfilm file, IE, 6/24, p.130

Hamilton Standard: See United Aircraft

Hammond Machinery Builders Inc.:
Electrolytic grinders, IE, 3/11, p.114
Manual platen grinder, wet or dry, IE, 6/10, p.188

Hancock Telecontrol Corp.:
Forms Datametric Div., B, 2/25, p.32
Lawson: Europeans' efficiency due to labor shortages, 1/14, p.86
Monitors and Producto-Corders for work performance, 5/13, p.73

Handy & Harman:
Silver brazing alloy, 2/18, p.58

Handy & Harman Tube Co. Inc.:
Was Posen & Kline, B, 5/27, p.33

Harnischfeger Corp.:
Broaching techniques, 6/3, p.57

Hanson-Van Winkle-Munning Co.:
Cutting fluids converted to fertilizers (Kleiner report), 1/28, p.20

Harbison-Walker Refractories Corp.:
Refractory brick resists abrasion, IE, 1/7, p.306

Harms Co., Perc. H.:
Chromate primer, IE, 2/25, p.114

Harper Electric Furnace Corp.:
Single door box kiln operates to 3092° F, IE, 1/14, p.101

Harper Mfg. Co.:
Sold, B, 6/3, p.35

Harris-Intertype Corp.:
New products, new markets mean profit growth, 2/4, p.37

Harris Mfg. Co.:
Chilling machine, IE, 4/1, p.117

Harsco Corp.:
Buys Camco Fittings, B, 4/1, p.28

Harvey Aluminum Inc.:
Adds anodizing facility, B, 1/14, p.28
Makes 8 ft impact extrusions, 6/3, p.31

Harvey Hubbell Inc.:
Cold headed beryllium copper parts and fasteners, 6/3, p.73

Hayes Inc., C. I.:
Graphite carbon powders bypassed by felt for insulation, 5/6, p.76
Graphite cloth serves as heating element in vacuum furnace, IE, 3/11, p.113
Vacuum furnace (cold wall type) and air Molecu-Dryer, IE, 3/4, p.117

Heald Machine Co.:
Bore-Matic improvements, IE, 4/8, p.115
Fingers using centrifugal force for grip solves chatter problem in brake drum boring, 4/1, p.43
N/C tool changer, IE, 5/6, p.143

Heco-Pacific Mfg. Inc.:
Dock board unit for unloading flat beds, IE, 1/28, p.108
Dock board unit, IE, 5/20, p.108

Heidrick & Struggles Inc.:
Management training programs, 3/15, p.102
Profile of metalworking presidents (statistical chart), 1/28, p.61

Helfred Corp.:
Drive system key to lift truck advantages, IE, 1/21, p.93

Henes Mfg. Co.:
Water welder, IE, 4/15, p.141; 5/27, p.148

Hevi-Duty Heating Equipment Co.:
Bell oven for nitriding, IE, 1/14, p.101
Cold wall vacuum furnace, IE, 6/24, p.140

Hexcel Products Inc.:
Aluminum honeycomb, Flex-Core, easy to form, 6/24, p.35

Hilfinger Corp.:
Zinc diecast cook stoves for Sears, Roebuck, 1/28, p.58

Hill Acme Co.:
Buys Loma and subsidiary, Lobeck Casting, 4/1, p.28
Machine chamfers couplings, IE, 4/15, p.133

Hobart Bros. Co.:
Portable wire feeder speeds remote work, IE, 3/18, p.199
Welder package, 750 ampere capacity, IE, 5/20, p.108

Hoffman Specialty Mfg. Corp.:
Skinner: Exploring new markets, 2/18, p.15
Skinner: Small firm seeks new markets, products, 3/4, p.50

Hohman Plating & Mfg. Inc.:
Solid film lubricant spray bond, IE, 1/14, p.98

Holden Co., A. F.:
Car bottom furnace, program control, luminous wall, 2/18, p.69

Holley Carburetor Co.:
For purchasing problems, check team buying (Thompson, Carbary, Neill), 4/29, p.48
Forms Italian subsidiary, B, 6/24, p.35

Hondo Motor Co. Ltd.:
Soichiro Hondo: Oriental maverick shows heels to competitors, 1/28, p.50

Honeywell: See Minneapolis-Honeywell

Horton Mfg. Co.:
Air Champ brake, IE, 6/10, p.184

Houghton & Co., E. F.:
Heavy duty cutting fluid, IE, 2/11, p.190
Lubricants for special conditions, IE, 4/1, p.115
Rust preventive spray for metals, IE, 4/8, p.117
Rust Veto Spray goes on wet metals, IE, 1/28, p.113

Howe Sound Co.:
Consolidates three divisions, B, 6/10, p.33

Howell Associates, Ward:
Howell: Manager with specialty most in demand, 4/22, p.27

Hubbell Inc., Harvey:
Cold heading beryllium copper fasteners, 6/24, p.71

Huffman Corp., S. E.:
Tape controlled punch press with X-Y axis positioning, 2/18, p.116

Hufford Corp.:
Now is Astro Structures Div., 1/21, p.33

Hughes Aircraft Co.:
Cost Improvement Program (CIP) for managers (committee pictured), 1/21, p.36
Flock Jr.: Rule for use of computers, 3/11, p.54
Machine performs functions of four, 1/14, p.104

Humanation Associates:
Ruttenberg: Metalworking plants, 2 in 3 gone five years hence, 1/28, p.98
Ruttenberg: Kaiser plan will teach USW productivity facts, 5/27, p.26

Humphreys Corp.:
Induction plasma torch, IE, 1/7, p.322
Torch heats gases, IE, 6/24, p.130

Hunter Engineering Co.:
Aluminum mill, Ala., joint venture, 3/11, p.33
Buys Mecca Machinery, B, 3/4, p.31

Hupp Corp.:
Buys Murray Corp., B, 2/4, p.28
Moves Easy Appliance to Cleveland, B, 5/13, p.35

Hutchinson & Sons Pty. Ltd.:
Norman Hutchinson: Japan cheapest price on high quality steel, 1/21, p.82

Huyck Corp.:
Metal fiber bonded product, 2/11, p.98

Hydraulic Press Mfg. Co.:
Dieing unit combines stamping, forming, IE, 3/11, p.117

Hytrol Conveyor Co. Inc.:
Conveyor made for ceiling, floor mount, IE, 6/17, p.136

I

Ilikon Corp.:
Pulsating heat process for hard steel parts, 3/18, p.31
Sponsors seminar, interrelationships in materials field, 1/28, p.58

Illinois Tool Works Inc.:
Buys interest in German firm, 1/28, p.32

Imperial Chemical Industries Ltd.:
Paint deposited from solution electrically, new process, 5/6, p.74

Imperial Electric Co.:
Brake motors, self-adjusting, IE, 4/1, p.110

Indiana General Corp.:
Magnet handles billets, IE, 5/6, p.149

Indium Corp. of America:
Basic characteristics of indium, 3/11, p.20

Industrial Acoustics Co. Inc.:
Sound test room, convertible, IE, 5/6, p.140

Industrial Management Corp.:
Acquires Moscow Screw, B, 1/21, p.29

Industrial Tectonics Inc.:
Cryogenic tube bearing takes high thrust loads, IE, 3/4, p.118
Self-aligning bearing has integral gear, IE, 1/28, p.111

Industrionics Inc.:
Wintriss devices solve stamping problems, 4/22, p.218
Wintriss overload detector checks damage, waste, IE, 3/4, p.120
Wintriss sonic detector-press ejection, IE, 1/7, p.318

Infrared Industries Inc.:
Optical pyrometer works to 8300° F, IE, 1/7, p.316

Infra Red Systems Inc.:
Quartz tube heater, IE, 1/7, p.310

Inland Steel Co.:
Adds to thin tin plate facilities, 1/7, p.33
Chromate coating for coils, 6/10, p.113
Columbium - vanadium bearing steels, INX 70 introduced, 6/3, p.29
Mine ownership in Africa defended by Randall, 4/22, p.210
Mold foundry, Indiana Harbor Wks., 1/21, p.52
Natural gas endorsed as open hearth fuel, 3/18, p.31
Reduction mill, Mesta contract, 5/20, p.33

Integral Motor Pump Corp.:
Canned pumps handle fluids and slurries at high temp., IE, 2/4, p.105

Interlake Iron Corp.:
Buys Enos Coal Mining, B, 5/20, p.35

International Business Machines Corp.:
Data communications system (manufacturing marketing info), 4/1, p.113
Dr. Tunis, speaker at COINS symposium, 6/24, p.30
Magnetic memory core, computer grain power (cover pic), 3/11, p.48
Microfilm units speed document handling, IE, 5/20, p.111
Tunnel diode unit may speed computer memory, 5/13, p.94

International Harvester Co.:
Orban charters plane to fly German lathe to N. Y., 4/22, p.208
Oxygen contracts for basic oxygen furnaces, Wisconsin Wks., 1/7, p.33

International Metals Corp. Ltd.:
Organized by Detroit men to produce metal products, 3/4, p.31

International Resistance Co.:
Production control tagging system, 1/28, p.49

International Ultrasonics Inc.:
Ultrasonic generator continuously tunable, IE, 3/25, p.190

Ipsen Industries Inc.:
Metal foams process, 5/20, p.65
Roller hearth furnace, refractory metals, IE, 5/6, p.142

Itmann Coal Co.:
Joint venture of National Steel, Consolidation Coal, 2/11, p.35

J

Jarvis Corp.:
Subminiature tapping head (Micro-Tapper), IE, 4/22, p.223

Johannson Co., I. O.:
Head moves on N/C drilling, boring unit, IE, 6/3, p.109

Johansson Gage Co., C. E.:
Automatic gaging machines, IE, 4/22, p.226
Comparator designed for fine measurements, IE, 2/4, p.100
Load cell (CEJ Dynamometer), IE, 3/18, p.202

Jones & Lamson Machine Co.:
30 in. side screen optical comparator, IE, 3/25, p.189
Automatic cycling feature of finishing units, IE, 3/4, p.115
Japanese license, B, 6/17, p.35
Pneumodynamics offer to buy, 1/21, p.29

Jones & Laughlin Steel Corp.:
Basic oxygen furnaces in operation, 6/3, p.72
Contracts for cold reducing millrolling stainless sheet, Louisville, Ohio, 4/22, p.31
Contracts for pelletizing plant, Ont., 3/4, p.33
Constructs buildings for Cleveland hot strip mill, 1/21, p.30
Low alloy steel dev., G Lab., 1/21, p.29
Turner: Inadequate manpower limits research, 3/4, p.106

K

KSM Products Inc.:
Controller for arc studweld features metering timer to control current, IE, 4/1, p.116

Kahn & Co. Inc.:
Systems measure wide torque range, IE, 2/4, p.105

Kaighin & Hughes:
To build continuous casting mill for Rebel Steel, 6/10, p.31

Kaiser Aluminum & Chemical Corp.:
Adds heat treat aluminum sheet facilities, Trentwood, B, 5/27, p.31
Aluminum alloy X70039 dev., 2/25, p.30
Blank checks provided venders cut purchasing paperwork, 3/4, p.30
Buying aluminum extrusion plant, Tex., from Capitol Products, B, 6/3, p.35
Elects Ready president to succeed Rhoades, 2/11, p.35
German project gets wide plate mill, 4/1, p.27
New five strand rolling mill, Ravenswood Wks., 3/11, p.69

Kaiser Engineers Div.:
5.5 per cent of steel made by L-D process, 1/21, p.27

Kaiser Jeep Corp.:
Was Willys Motors, B, 4/22, p.35

Kaiser Refractories:
Australian plant, Port Kembla, 6/24, p.35
New plant, Moss Landing, Calif., 3/25, p.84

Kaiser Steel Corp.:
Emerson: We talk everything but pricing, 4/22, p.210
Expands welded structural facilities, 2/4, p.27
Freight car plant nearby sought, 5/6, p.89
Paycheck bonus, Fontana mill, 6/10, p.19
Progress Sharing booklet released, 1/14, p.23
Progress sharing, will incentive units do harm? 1/21, p.24
Progress sharing vote, workers briefed, 1/7, p.27
Progress sharing, executives briefed, 2/18, p.25
Profit sharing estimated average of 10c an hour, 3/11, p.31
Progress sharing plan-bonus, 5/6, p.25
Steel dumping charge (Japan), 2/11, p.18

Kalamazoo Tank & Silo Co.:
Automatic manual band cutoff machine, IE, 6/10, p.186

Kaman Aircraft Corp.:
Neutron analysis generator-portable, IE, 6/10, p.187
Neutron activation analysis system, 6/10, p.103

Kaufman Tool & Engineering Corp.:
Rubber draw die, no scratch, 2/11, p.93

Kawecki Chemical Co.:
Buys Metalonics, B, 1/14, p.28

Kaynar Mfg. Co. Inc.:
Buys Greer Stop Nut, B, 6/3, p.35

Kearney & Trecker Corp.:
Easy payments for tools, Cash-Flo plan, 3/4, p.106

Kennametal Inc.:
Hard carbide cutting grades K68 and 45, IE, 5/6, p.140
Tips on machining high alloys, 4/22, p.137
Unit ends chatter and vibration, 5/13, p.73

Kennecott Copper Corp.:
Expansion program ($100 million), 2/25, p.30

Kerr-Wireryte Co.:
Formed by merger, 1/21, p.29

Keystone Steel & Wire Co.:
Builds research center, 3/25, p.33

Kidde Constructors Inc., Walter:
Plant design of future, separation of men and machines, 2/4, p.42

King-Seeley Thermos Co.:
Add-on control automates drill presses, Cam-Act, IE, 4/29, p.104

Klein & Associates:
Fringe benefits report, 6/3, p.58

Knapp Design Associates Inc.:
The case for design beyond engineering, value analysis, 5/13, p.71

Knight Machinery Co., W. B.:
Measuring machine, IE, 1/14, p.98

Kobzy Tool Co.:
Buys Perfecto Eng., B, 2/4, p.28

Koppers Co. Inc.:
Continuous casting machine (square billets) built for Seaway, 3/18, p.33
Continuous casting machine, automated control, 6/3, p.27
Engineering study-raw material handling, Zug Island, 3/25, p.35
Morocco discusses steel mill construction, 4/15, p.17
Tunstead: Adopt product manager concept to find new markets, 2/4, p.38

Koppers of Turkey Inc.:
Hagan: Sell U. S. knowhow, 5/27, p.18

Koppy Tool & Die Co.:
DeGain: Computers sacrifice ideas, 1/7, p.136

Krautkramer Ultrasonics Inc.:
Nonrotating tube, bar testing, 6/24, p.81
Portable inspection instrument checks flaws, 4/15, p.141

Kux Machine Co.:
Diecaster-conveyor, IE, 1/7, p.318

L

Landis Machine Co.:
Bolt thread cutting machine, IE, 4/22, p.226

Landis Tool Co.:
Tool buying can't be reduced to formula, 2/18, p.102

Lapointe Machine Tool Co.:
Broacher milling auxiliary, IE, 2/18, p.112

LaRose & Associates Inc., W. T.:
Sealer, silicone rubber compound, 5/13, p.72

Lasalco Inc.:
Cycle changes easy on plating machine, 4/1, p.110

LaSalle Steel Co.:
Develops Super Surface steel bars, 5/28, p.25

Latrobe Steel Co.:
$13 million plant and equipment expansion program, 3/11, p.33
GE contract for specialty steels furnace, 1/21, p.30
Service center in Conn., B, 5/27, p.33

Lavino & Co., E. J.:
New basic brick stronger when hot 'direct bonded,' 6/17, p.80

Lear Siegler Inc.:
Astro Structures: Shear spinning makes thinner pressure vessels, 1/21, p.33
Green laser for underwater military use, 2/18, p.17

Lectromelt Furnace Div.:
See McGraw Edison

Leeds & Northrop Co.:
Analog computer for Detroit Edison generator, 4/22, p.31
Master instrument for car bottom furnace, 2/18, p.69
Plug-in thermocouple cartridge checks carbon equivalent, IE, 4/1, p.111

Lees-Bradner Co.:
High speed thread miller, IE, 2/18, p.111
Hobber for sun gears minimizes shaving, IE, 1/28, p.113
Thread miller makes disc, face type cams, E, 6/24, p.131

Lehigh Inc.:
Air pressure powers short stroke press, IE, 6/17, p.136

Leitz Inc., E.:
Metal structures studied hot, vacuum furnace, 4/1, p.52

LeMaire Machine Tool Co.:
Horizontal drill uses 7 ton master fixtures, IE, 2/18, p.117

Lempco Products Inc.:
Joint venture with Danish firm, 4/8, p.27

Lennox Tool & Machine Builders:
Buys Excelsior Tool, B, 5/20, p.35
Buys Gemco line, B, 1/14, p.28

Lepel High Frequency Laboratories Inc.:
Convertible generator for induction heating, IE, 3/18, p.202

Lewis Machine Co.:
Unit straightens, travel cuts steel, built for Standard Screw, 6/3, p.35

Lewis Welding & Engineering Corp.:
Automatic welding head manipulator, IE, 4/15, p.133

Lima Electric Motor Co.:
Constant hp drive remotely controlled, IE, 5/20, p.117
Synchronous generators, IE, 3/25, p.201

Lincoln Electric Co.:
Announces price cuts (cost cutting formula, yearend bonuses), 2/11, p.31
Combination, dc welder and ac auxiliary power supply, IE, 6/10, p.180

Lindberg Engineering Co.:
Bought by Basic Products, 1/7, p.33
Electric furnace treats 600 lb per hour, IE, 4/22, p.226
French gantry furnace, 4/29, p.54
Sintering, cold wall furnaces, IE, 6/10, p.179

Linde Co.:
Contract to Kaiser for liquid hydrogen plant, 2/11, p.33
To produce carbon steel welding wire at Ashtabula, 4/22, p.35
Tungsten carbide coating for sheet stock, IE, 1/7, p.309
Welding unit (for NASA Centaur booster) cover pic., 4/15, p.64

Line Material Industries:
Transformer housing, reinforced plastic shell, 3/11, p.62

Ling-Temco-Vought Inc.:
Automatic fusion welder joins thin titanium, 6/10, p.117
Sorghum molasses used to refine metal grain during copper electroplating, 6/10, p.96

Link-Belt Co.:
Ball bearing line, IE, 5/6, p.146
Speed reducer line, IE, 4/1, p.112

Livernois Engineering Co.:
Transfer unit automates OBI presses, IE, 4/8, p.118

Lock Rings Inc.:
Formed, B, 6/3, p.35

Lockheed Aircraft Corp.:
2000-mile-an-hour transport prototype, 6/24, p.19
Builds missile research center, Ala., 3/4, p.33

Lockheed-Georgia Co.:
Aluminum forgings for jet airfreighter, 2/25, p.66

Lodge & Shipley Co.:
Heavy duty lathe tailored to NC potential, IE, 4/29, p.97

Logansport Machine Co.:
Hydraulic presses, IE, 3/25, p.190

Loma Machine Mfg. Co.:
Cold saw cuts slabs, billets, IE, 2/4, p.100

Lombard Corp.:
Agreement with Bliss for tube and bar drawbenches, 2/25, p.31

Lord Mfg. Co.:
Thorn: Reliability improved, 5/27, p.20

Loud Machine Works Inc., H. W.:
Switch to forgings (cylinder caps of AISI 4130 alloy eliminated leakage problems), 1/28, p.55

Ludlow Valve Mfg. Co.:
Merges with Patterson complex, 2/25, p.32

Lufkin Rule Co.:
Optical comparator, portable, IE, 2/25, p.119

Lukens Steel Co.:
Briqueting press for U. S. Industries, 1/21, p.30
Carbon plate steels introduced (M-Series), 1/21, p.28
Clad steel plate price cut, 4/1, p.72
Computerized electric furnace proposed, 2/25, p.18
Giant steel plate for generator, 5/27, p.31
Plates produced for giant reactor vessel, 2/25, p.28
Vacu-Blaster, new slab cleaning machine-dustfree, 1/28, p.54

Luria Bros.: See Ogden Corp.

Mc

MacDermid Inc.:
Chromate conversion coating (Macro Brite), IE, 1/14, p.103

MacLeod Instrument Corp.:
Digital plotters, IE, 6/17, p.128

McCulloch Corp.:
Rectifier unit for portable arc-welder, IE, 4/15, p.140

McDowell Co.:
Belt feeder control, ABC Scale Div., IE, 2/11, p.188

McGraw Edison Co.:
Oswandel (Lectromelt Div.): Who's to buy the 25 vacuum furnaces? 2/4, p.25

McJunkin Corp.:
Buys Culbert Pipe, B, 2/25, p.32

McKay Machine Co.:
Federal-Warco: Flashwelding-trimming combined, IE, 3/11, p.114
Federal-Warco: High speed, automatic shell forming and mash seamwelder, IE, 5/20, p.118
Spank press, height minimized, IE, 5/13, p.159

McKinsey & Co.:
Manager's role in computer success, survey, 4/29, p.31

McLouth Steel Corp.:
Computer operates hot strip mill, 2/18, p.31
Computer on hot strip mill (cover), 4/8, p.53
Contract for continuous pickling line, Gibralter, Mich., plant, 4/22, p.35

M

3M Co.: See Minnesota Mining & Mfg.

MB Electronics:
Vibration pickup spotted with tube voltmeter, IE, 3/11, p.112

M-H Standard Corp.:
Compact vertical conveyor handles cartons, IE, 5/6, p.147
Scrap handling conveyor, IE, 2/25, p.122

M&M Tool & Mfg. Co.:
Power package on rotary table, IE, 3/18, p.192 and 5/13, p.158

M&T Chemicals Inc.:
Aluminum immersed in tin for plating, 2/4, p.20
Self-regulating hard chrome plating solution, aids etching, TO, 6/24, p.130
Vinyl foam coating (Unichrome Plastisol) for metal parts, 3/11, p.63

Machlett Laboratories Inc.:
TV camera tubes for x-ray metal study, 2/11, p.119

Macrosonics Corp.:
Ultrasonic generator, multifrequency, IE, 6/17, p.130

Magnaflux Corp.:
Bought by Champion Spark Plug, 6/24, p.35
Eddy current (electronic detection) ups pipe coupling quality, 6/3, p.68
Eddy current system tests race car valve faces at Indianapolis, 6/17, p.18
Ultrasonic inspection unit, IE, 1/7, p.309

Magnetic Metals Co.:
Forms Canadian subsidiary, B, 6/10, p.35

Mallory & Co. Inc., P. R.:
Mallory (president): Merger of organization line and staff to meet new markets, 3/4, p.52

Manganese Steel Forge Co.:
New process hardens manganese steel, 3/18, p.106

Marblette:
Aluminum filled epoxies for heat resistant tooling, 2/4, p.102

Marcus Tools Corp.:
Twist drills, roll forged, TO, 6/17, p.20

Marion Power Shovel Co.:
NASA contracts for huge crawler transports, 2/18, p.18

Marquette Tool & Die Co.:
Machinable carbide die (Perro-Tic C) punches hole in costs, 6/17, p.31

Martin Co.:
Halpin: Quality control man in dilemma, 1/7, p.292
Hot sandwich oven, refractory honeycombs, TO, 5/27, p.20
Missile data over telephone lines with Dial-o-verter, 2/25, p.63
Small business forums, 1/7, p.146
Underwater tank of future (cover), 5/27, p.74
Value analysis booklet (production cost vs. tolerances and finishes), 2/18, p.56
Value analysis program, Orlando, Fla., 5/27, p.91

Martin Engineering Co.:
Vibration inducers, IE, 1/21, p.94
Vibrotor series, IE, 2/11, p.186

Martin Metals Co.:
Cobalt base alloy dev., SM 322, 1/28, p.30

Materials Research Corp.:
Compact thermoelectrics by evaporation process, 3/4, p.71

Mathews Conveyer Co.:
Line roller conveyor, IE, 6/24, p.136

May-Fran Mfg. Co.:
Metal chip removal conveyor, Chip-Tote, IE, 5/13, p.161

Mead Corp.:
Fiberboard material handling trays, IE, 1/14, p.99

Mergenthaler Linotype Co.:
Merges Electra Corp., B, 5/20, p.35

Mesta Machine Co.:
Contracts for Bethlehem and Castle & Co., B, 5/20, p.33

Metal Removal Co.:
Fiber glass reinforces grinding wheels, IE, 4/15, p.135

Metals & Controls Inc.:
Overheat protector kit for motors, IE, 3/4, p.117

Metco Inc.:
Nickel aluminide coating, 5/13, p.33
Redesigned metallizing gun, IE, 3/11, p.114

Metra-Tech Corp.:
Scale readings in tenths, IE, 1/14, p.94

Meyers ElectroCooling Products Inc.:
Cutting tools cooled thermoelectrically, 5/13, p.80

Michigan Bell Telephone Co.:
McCarthy addresses Maintenance Show; Supervisors unfit for job, 2/11, p.112

Michigan-Dynamics Inc.:
Merger, B, 6/3, p.35

Michigan Machine & Broach Co.:
Horizontal broacher does small, internal jobs, IE, 1/7, p.303

Michigan Wire Cloth Co.:
Merges, B, 6/3, p.35

Micromatic Hone Corp.:
Fabroid Div., Calif., B, 2/25, p.32
Fixturing jig on Hydrohoner, 2/11, p.93

Micrometrical Mfg. Co.:
Surface profiles drawn without touching work (noncontact measuring system), 5/27, p.151

Midland-Ross Corp.:
Buys J. Leukart Machine, B, 2/4, p.28
Changes Owosso Div. name to Power Controls, B, 4/22, p.35

Milford Rivet & Machine Co.:
Horizontal riveters, automatic feed, IE, 5/6, p.149
Rivet setting machines, IE, 3/25, p.191

Miller Electric Mfg. Co.:
Unit designed for reproducible welds, IE, 5/13, p.165
Unit handles programed welding sequence, IE, 4/15, p.136

Miller-Stephenson Chemical Co. Inc.:
Mold release lubricant, fluorocarbon type, IE, 1/14, p.103

Milwaukee Electric Tool Corp.:
Circular saws, 6½ in. blades, IE, 4/15, p.136

Mimik Tracers Inc.:
Feed control package (Dynatrace) fits engine, turret lathes, IE, 6/3, p.111
Tracing line, 5/13, p.72

Minneapolis-Honeywell Regulator Co.:
An overgrown product line (replacement controls), 1/7, p.162
Data processing (computer) potential (inventory control, accounting), 4/1, p.67
Electrohydraulic tracer drives, IE, 5/27, p.144
Honeywell's Binger: Systems concept, advice for suppliers, 6/17, p.28
Thermostat (tube-type) accurate within 1/10° F, 1/21, p.39

Minneapolis Mining & Mfg. Co.:
Adhesive, high peel strength, IE, 2/4, p.98
Adhesive seals fibrous insulation, IE, 6/24, p.139
Auto afterburner for smog control, 1/21, p.72
Beecroft: Industrial momism no way to help salesmen, 1/28, p.98
Finishing wheel-Scotch-Brite, IE, 1/14, p.94

Minneapolis-Moline Inc.:
Fork lift for crowded aisles, IE, 5/6, p.139

Minster Machine Co.:
Car bottom furnace paying off, 2/18, p.69

Missouri Diecasting Corp.:
Solves problem of casting furnace blower housing in one piece, 1/28, p.48

Modern Plastic Machinery Corp.:
Equipment modernizes injection molders, IE, 1/7, p.315

Molectrics Inc.:
Unit cleans and machines metal parts at same time, 2/4, p.20

Monk & Associates Inc., Howard H.:
Glynn: Sales promotion programs, 4/15, p.124

Monsanto Chemical Co.:
Enters copper powder field, 6/10, p.124

Moog Servocontrols Inc.:
Electrohydraulic flying cutoff control, IE, 3/25, p.192
Tape preparation and checking done by machinists, 4/15, p.33

Morgan Construction Co.:
License with Kocks for wire rod mills (German design), 3/18, p.33

Motec Industries Inc.:
Sold, B, 1/28, p.32

Motion Indicating Devices:
Mechanical wear factors checked by motion indicating device, IE, 3/11, p.112

Murray-Way Corp.:
Abrasive belt head system wet grinds strip, IE, 1/28, p.105

Mutual Products Co. Inc.:
Buys Metal Specialties, B, 4/1, p.28

N

NRC Equipment Corp.:
Electron beam welder runs on low voltage, IE, 6/17, p.130

NTW Missile Engineering Inc.:
Roll extrusion (new), prototype machine extrudes big cylinders, IE, 1/14, p.26

Nalco Chemical Co.:
Chemical lubricant increases cold heading tool life, IE, 6/3, p.110
Oil serves dually, gear lube or cutting, IE, 2/11, p.190

National Broach & Machine Co.:
Automatic electric brake feature of gear speeder, IE, 1/28, p.105
Unit detects nicks in gears, IE, 6/17, p.137
Universal rotary gear shaving machines, IE, 5/27, p.144

National Carbon Co.:
Graphite felt insulation in vacuum furnaces, 5/6, p.76
Material conducts, insulates (boron nitride), 4/8, p.59

National Controls Corp.:
Air pollution control systems, 4/8, p.27

National Cylinder: See Chemetron

National Electric Welding Machines Co.:
Arcwelder, cast and finned cooling segments cut part distortion, 5/13, p.88

National Helium Corp.:
Heat exchanger assembled for cryogenic use, 5/27, p.33

National Lead Co.:
Doehler-Jarvis: Diecast aluminum 'floating floor' plate, 5/27, p.26
Encapsulation-plastic jackets, new Nalcons, 6/24, p.32
Shipping containers for spent nuclear fuel elements, 6/10, p.115

National Patent Development Corp.:
Russian continuous casting license, 6/17, p.29

National Research Co.:
Acquisition bid by Norton, 2/11, p.33
Cold welding experiments, 6/17, p.31
Dr. Torti: Once spurned tantalum now on aerospace list, 2/11, p.90
Vacuum coating process, metal corrosion protection, 1/14, p.26
Vacuum diffusion pump, IE, 4/22, p.224

National Ultrasonic Corp.:
Cylinder blocks, castings cleaned by agitation, IE, 4/29, p.100

National-Standard Corp.:
Tool life increased by stress relief process, 2/11, p.101

National Steel Co.:
Jointly forms Itmann Coal Co., B, 2/11, p.35

Nationwide Leasing Co.:
'Million dollar financing plan', 3/4, p.30

Nelson Stud Welding:
See Gregory Industries

New Jersey Zinc Co.:
Award winner: Copper powder automotive rectifier base, 4/15, p.31

New Products Institute Inc.:
Hilten: Converting new products into gold mines, 3/11, p.100

New York Air Brake:
B-I-F Industries Div.: Screw type feeder, IE, 5/20, p.108

New York Wire Cloth Co.:
Now New York Wire Co., 5/6, p.35

Newport News Shipbuilding & Drydock Inc.:
May win hydraulic turbine award, Millers Ferry, Ala., 6/3, p.18

Newaygo Engineering Co.:
Pneumapump system moves sand, dry materials, IE, 5/20, p.108

Niagara Machine & Tool Works:
Press brake improvements, IE, 6/17, p.128
Series BP automatic presses for blanking, forming, IE, 1/21, p.94

Nicklason Tool & Die Co. Ltd.:
Nesting blocks-universal clamps secure work, 3/18, p.111

Niles Steel Tank Co.:
Semiautomatic Squirt welding (tank shells), 2/25, p.51

Noble & Westbrook Mfg. Co.:
Unit roll grooves cylinders, IE, 3/25, p.201
Unit roll marks metals, IE, 3/18, p.195

Non-Linear Systems Inc.:
High speed data system measures dc voltage, IE, 1/7, p.317
Unit checks daily production (statistical graphs), 2/18, p.112

Nordson Corp.:
Paint setup on wheels, IE, 1/7, p.308

North American Aviation Inc.:
Ablative coatings resist missile heat, 6/3, p.31
Ablative coating (plastic), metal insulator, 6/3, p.73
Atwood addresses Chicago Space Conference, 5/13, p.18
Autonetics: Beryllium use for instruments, stability and accuracy, 6/17, p.85
Interferometer (helium-neon laser) measures distance between two atoms, 4/8, p.20
Purge chambers for inert gas welding of titanium, 2/18, p.59
Silver brazing alloy, 2/18, p.58

Northfield Foundry & Machine Co.:
Saw with tilting arbor, variable speeds, IE, 3/18, p.192

Northrop Corp.:
Automated Operations Control, Norair Div., 4/15, p.20
Laminate flow control (LFC), saw used to slit wings and fuselage surfaces, 6/10, p.98

Norton Co.:
Bids to acquire National Research, 2/11, p.33
Reactive dressing keeps grinding wheels sharp, 1/21, p.20
Surface grinder-high speed traverse, IE, 4/8, p.121

Nu-Matic Grinders Inc.:
Belt grinder, IE, 6/17, p.131

Numerical Control Corp.:
Continuous path N/C unit, mechanical system, IE, 5/13, p.165

Nylok Corp.:
Licensing can be profitable, 1/14, p.49

O

Ogden Corp.:
Ablon (Luria official) sees new era for scrap, 1/28, p.98

Ohio Crankshaft Co.:
Device anneals pinion shafts, IE, 2/11, p.189

Ohio Electric Mfg. Co.:
Lifting magnet, 4000 lb, 2/11, p.188

Ohio Gear Co.:
C flange mountings on speed reducers, IE, 3/4, p.121

Okonite Co.:
Revises pricing on instrument tubing, 4/8, p.87

Olin Mathieson Chemical Corp.:
O'Connell gives management view on NLRB rulings, 4/1, p.21

Optical Gaging Products Inc.:
Contour projector, improvement, IE, 3/25, p.196

Orbit Instrument Corp.:
Finances for Italian facility, 6/3, p.102

Osborn Mfg. Co.:
Ramron-grinding wheel on display, IE, 3/25, p.195

Otis Elevator Co.:
Hi-Tailer fork trucks, Baker Div., IE, 6/10, p.179
Work station, Calif., for electronic assembly, 1/14, p.28

Outboard Marine Corp.:
Evinrude: Alloy plus stainless composite (propeller shaft for outboard motor), 5/27, p.86

P

Pace Controls Corp.:
Measuring system, optical scanner, IE, 5/6, p.151

Pacific Industrial Mfg. Co.:
Press brake, 100 strokes per min., IE, 2/11, p.183

Package Machinery Co.:
Diecasters rated at 600 tons, Reed-Prentice, IE, 5/13, p.162

Page-Hersey Tubes Ltd.:
Buys huge resistance welding unit to produce ½ in. wall pipe, 3/4, p.31

Palmgren Steel Products:
Rotary table 10 in. diameter surface, IE, 2/25, p.118

Pandjiris Weldment Co.:
Boom manipulator, IE, 1/28, p.110
Welding seamer for missile shells, IE, 3/4, p.117

Pangborn Corp.:
Vibratory finisher, IE, 5/20, p.112

Panther Chemical Co. Inc.:
Chemical additive for electrolytic cleaning, IE, 6/24, p.139

Paradiso Associates:
Von Kleydorff: U. S. business outlook in Europe, 2/11, p.176

Parker-Hannifin Corp.:
Bender shapes tubing, IE, 1/14, p.94
Buys Gibbons Salem Machine, B, 4/22, p.35

Parker-Hannifin (Canada) Ltd.:
Established, B, 4/29, p.30

Patterson Foundry & Machine Co.:
Buys Colonial Iron Wks., B, 3/25, p.35
Member of Patterson complex (firms), 2/25, p.32

Patterson Industries:
Buys Skinner Engine, B, 6/17, p.35

Pettibone-Mercury Corp.:
Giant lift truck uses GE's motorized wheel (cover), 2/11 issue

Pfaudler Permutit Co.:
Waste recovery, evaporation system (switch from cyanide method), 2/11, p.119

Philadelphia Resins Inc.:
Epoxy coating, IE, 3/18, p.190

Philco Corp.:
Demonstrator for teaching maintenance-electronic instrumentation, 2/11, p.19
Modernization program, 2/4, p.26

Philips Electronics Instruments:
TV x-ray shows moving parts, IE, 2/18, p.112

Philips Electronics & Pharmaceutical Industries Corp.:
Spectrometer checks six elements at once, IE, 6/24, p.139

Phoenix Steel Corp.:
Closes Chester blast furnace, 4/8, p.87

Picker X-Ray Corp.:
Pipe welded seams, X-ray, TV test, 5/6, p.33
Radioisotope cameras light in weight, IE, 4/15, p.136

Pierce-West Inc.:
Grinding attachments-accuracy, IE, 4/1, p.110

Pines Engineering Co. Inc.:
Automatic cutoff, Dyna/Cut tube machines, IE, 2/4, p.101
Cutoff machine, advantages, IE, 4/22, p.217
Tube, rod end finisher, IE, 3/25, p.198

Pinkerton Electro-Security Corp.:
Radar alarm system, IE, 6/10, p.188

Pittsburgh-Des Moines Steel Co.:
USW labor pact, 6/24, p.27

Pittsburgh Plate Glass Co.:
Adhesive combines two advantages, IE, 6/17, p.128

Pittsburgh Steel Co.:
Maxwell Jr.: Proposes consumption tax, 2/4, p.17
Maxwell: Explains need for profits, 4/8, p.106

Pittsburgh Steel Foundry Co.:
Changes name, B, 3/11, p.35

Plasmadyne Corp.:
Atmosphere chamber for plasma spraying, IE, 3/4, p.123

Pneuco Machinery Co.:
Press brake air actuated, IE, 4/29, p.106

PneumoDynamics Corp.:
Offer to buy Jones & Lamson, 1/21, p.29

Polymer Corp.:
Fluorosint material, 4/15, p.79

Portage Double-Quick Inc.:
Adjustable cutoff tools, IE, 6/10, p.194

Porter Company Inc., H. K.:
Buys Simonds Worden White, B, 4/22, p.35
Refractory facilites for Vanport, Pa., 1/21, p.67
Riverside-Alloy, continuously cast wire, 5/6, p.74
Vulcan-Kidd fluted, ingot mold design improves steels, 3/4, p.20

Powder Alloys Corp.:
Heavy metal alloys, higher density, 1/7, p.168

Power Control Products Inc.:
Air operated, portable coil, strip feeder, IE, 5/20, p.117

Precision Spring Corp.:
Buys Harper Mfg. and changes name to Lock Rings, B, 6/3, p.35

Precision Tool Mfg. Co. of Illinois:
Drill has 18 or 24 spindles, IE, 4/8, p.117

Precision Welder & Flexopress Corp.:
Press accurate at high speed, IE, 2/4, p.106
Press feed operated by electric eye, IE, 5/27, p.151
Resistance welder employs foil-buttseam (car body tops), 4/22, p.152
Transistor welder, IE, 4/1, p.114

Prentice-Hall Inc.:
6 month forecast-industrial production, 5/13, p.17
Urban renewal spending, 4/29, p.18

Pressed Steel Co. Ltd.:
Coil processing line knocked down for shipment, 4/29, p.30
Paint deposited from water solutions electrically, 5/6, p.74

Pressure Blast Mfg. Co.:
Options offered for wet blast machines, IE, 5/6, p.144
Semiautomatic dry blast finisher, IE, 6/10, p.194
Wet blast cabinet, IE, 1/7, p.310

Price Co., H. C.:
CO_2 pipeline welding, 1/21, p.20

Production Tool Corp.:
Moves headquarters to new plant, B, 1/28, p.32

Punch Products Corp.:
Unipress holder for punching, IE, 4/22, p.224

Pyrotel Corp.:
Portable pyrometers, IE, 3/4, p.123

Q

Quinnico Inc.:
Special crane grab handles aluminum ingots, IE, 5/6, p.153

R

Radio Corp. of America:
Copper clad plastic can be punched (printed wiring boards), 4/1, p.52
Plastic based laser uses europium, Princeton lab, 3/26, p.76

Radionics Inc.:
Cobalt 60 Gammatron checks castings, IE, 6/24, p.132

RayData Corp.:
Battery powered balancer, analyzer, IE, 1/21, p.88

Raymond Corp.:
Lift truck holds rider, pallets, IE, 6/10, p.182

Raytheon Co.:
Automated distribution system serves one market with single inventory, 2/18, p.61
Laser most powerful to date, 2/4, p.20

Rea Magnet Wire Co.:
Pallet protects thin strip, 4/8, p.58

Rebel Steel Corp.:
Continuous casting mill planned for Tenn., 6/10, p.31

Recordak Corp.:
Automated information retrieval system, IE, 6/3, p.109
Image quality on 35 mm microfilm, IE, 5/13, p.160

Reed-Prentice: See Package Machinery

Reeve Electronics Inc.:
Soldering equipment brazes fittings to tubing, IE, 3/18, p.197

Reliance Electric & Engineering Inc.:
Digital control counter controls strip feed, IE, 1/21, p.90
Gear motors mounted on driven shaft, IE, 3/25, p.196
New vs. Statatron II rectifier line, (solid state speed drives), 1/21, p.29; and 1/28, p.106
Silicon controlled rectifier reversing drive rated 1/3 to 1/4 hp, IE, 6/3, p.111
Variable speed drive, high capacity belt and belt tensioning device added, IE, 5/6, p.146

Rem Sales Inc.:
Digital index control for miller, IE, 2/11, p.186
Milling machine control-automatic, IE, 1/14, p.101
Milling machine redesign, IE, 4/1, p.116

Renault Inc.:
Grob: Idea swap essential for world trade, 2/25, p.104
Grob: Replacement parts for imported cars, good market for U. S. makers, 2/25, p.29

Ren Plastics Inc.:
Epoxy plastic tooling materials dev., IE, 4/22, p.220

Republic Steel Corp.:
Architectural stainless sheets textured with brick dust, 1/28, p.18
Automatic bar classifier detects seams, 5/27, p.31
Bar mill resumes operation, Cleveland, 1/4, p.19
Basic oxygen furnaces (6) installed (Cleveland, Warren, and Gadsden), 4/1, p.27
Bright annealing line installed at Massillon, 3/11, p.33
Buttweld pipe, Farrowtest, 3/18, p.108
Capital spending boost, 5/13, p.19
Facilities improvement program, 5/20, p.33; correction on Niles thin tin plate mill, instead basic oxygen furnaces, Cleveland, Gadsden, 5/27, p.31
Michelon: Personnel's changing role (conference speaker), 2/4, p.25
Plastic coated steel tubing 'X-Trube', 3/25, p.80
Reopens pipe mill, Gadsden, 2/18, p.74

Resources for the Future Inc.:
Capital spending projection for year 2000, 4/1, p.25

Rex Co., J. W.:
Buys Florida Gears, B, 4/8, p.28

Reynolds Metals Co.:
Aluminum pellets smaller than rice grains, new sheet rolling process, 3/4, p.30
Aluminum pellets to sheet in one step (new process in Bellwood, Va., plant), cover story, 4/1, p.39
Aluminum potlines reactivated, 6/10, p.146
Aluminum screw machine stock, IE, 1/7, p.307
Builds aluminum beer can plant, St. Paul, B, 2/11, p.35
Builds Nova Scotia can plant, B, 6/24, p.32

Rheem Mfg. Co.:
Plastic protects metal edges, TO, 6/10, p.20
Steel shipping containers, plastic fused to interiors, 2/25, p.51

Rhode Island Engineering & Mfg. Corp.:
Horizontal spinning lathe, IE, 6/10, p.189

Ridge Tool Co.:
Parcell: Small firms techniques to enter new markets, 3/4, p.53

Roanoke Electric Steel Corp.:
Continuous cast steel bars at new plant replacing ingots, 5/13, p.29

Robbins & Myers Inc.:
Compact C Series motors, IE, 6/3, p.117
Cranes made for intermittent duty, IE, 6/17, p.134
J-3 hoist line, IE, 2/18, p.114

Roberts Co., C. A.:
Square tubing line, IE, 1/28, p.106

Robertshaw Controls Co.:
Was Robertshaw - Fulton, and Bridgeport Thermostat now Milford Div., 4/22, p.35

Robin Products Co.:
Plastic fasteners hold, seal, insulate trim, 3/25, p.78

Roblin-Seaway Industries Inc.:
Enters continuous casting field, 1/28, p.31

Rockbestos Wire & Cable Co.:
Wires, cables resist heat and radiation, IE, 6/17, p.137

Rockwell Mfg. Co.:
Research lab, new center, IE, 6/24, p.33

Rockwell-Standard Corp.:
Mercury vapor lighting, Spring Div., 5/27, p.94

Rohr Corp.:
NASA award for antenna system, 3/11, p.68

Romich Corp.:
Immersion lead tester for porous parts, IE, 3/4, p.118

Ronson Metals Corp.:
Didymium-rare earth, lower priced, 6/24, p.76

Ross & Son Inc., Charles:
Planetary mixers, IE, 1/14, p.103

Roteck Inc.:
Wire race bearings dev., 5/27, p.26

Roto-Finish/Ransohoff:
Vibratory finisher-end unloading type, IE, 3/25, p.201

Ryan Aeronautical Co.:
Cast steel dies used to explosive form Saturn bulkheads, TO, 6/10, p.20
Machine performs functions of four, IE, 1/14, p.104

Ryerson & Son Inc., Joseph T.:
Extra charges revised, 2/4, p.57
Price revision in Philadelphia, 2/18, p.74
Pricing revision on carbon steel products, 3/4, p.77

S

St. Joseph Lead Co.:
Strike ends, 4/8, p.87

St. Louis Die Casting Corp.:
Vacuum melted steel doubles die life, 2/11, p.101

St. Mary's Mfg. Corp.:
Buys K&W Tool Products, B, 3/4, p.31

SKF Industries Inc.:
Automates Hofors (Sweden) steel mill, electronic data processing, 4/1, p.27
Engineering and research lab (bearings), King of Prussia, Pa., 6/17, p.33

S & S Machinery Co.:
Table positions on X, Y axis, IE, 2/4, p.105

Sandy Hill Iron & Brass Works:
Coolant clarifier ends calender roll tailmarks, 6/10, p.117

Sara Lee Kitchens:
How systems concept worked in computer installation, 6/17, p.28

Scaky Bros. Inc.:
Arc spotwelder fastens thin bracket to missile section, 4/29, p.57
Automatic fusion welder joins thin titanium, 6/10, p.117
Giant positioner, IE, 4/22, p.218
Spotlight locates work, IE, 2/4, p.98
Tig spotwelder, high weld consistency, IE, 2/4, p.100
Welding positioner king sized, IE, 2/25, p.122

Screw & Bolt Corp. of America:
Chemical bonding tech. for Jay-Lok fastener, 5/6, p.31

Scully-Jones & Co.:
C.O.S.T. boosts sales, marketing campaign, 4/8, p.60
Tooling (Insta-Set) system solves short run problems, 6/24, p.72

Sealed Power Corp.:
Melts high grade iron from low cost scrap (cover), 1/28, p.44
Modernization programs (feature story), 1/28, p.45

Sears, Roebuck & Co.:
Gas and electric home ranges die-cast in zinc by Hilfinger, 1/28, p.58

Selas Corp. of America:
Study on range of protective gases, 5/13, p.17

Selectrons Ltd.:
Hard anodizing unit does plating, IE, 2/25, p.121

Seneca Falls Machine Co.:
Monitor device warns of motor malfunctions, IE, 3/25, p.193
NC system 'Tapetronic,' IE, 4/8, p.123

Sendzimir Inc.:
Agreement with Concast for selling equipment combinations, 1/14, p.27

Servonic Instruments Inc.:
Buys Dynamic Measurements, 1/21, p.29

Sharon Steel Corp.:
Acquiring Union Steel, 1/14, p.27
Kaldo basic oxygen facilities, 6/3, p.72

Sheehan Co., R. T.:
Conveyors equipped with pin-drive pulley, belt, IE, 2/18, p.119

Sheffield Corp.:
Air gages in Ford-Werke's facility, 4/8, p.104
Crushtrue grinding machine, IE, 2/11, p.183
Grinding machine, gages at ASTME show, IE, 4/22, p.217
Ultrasonics assists grinding (AF contract), 4/15, p.31
Ultrasonic vibrations help grinding, 5/20, p.56

Sheffield Div.: See Armco

Sheldon Machine Co. Inc.:
Accessory units for turret lathes, IE, 4/22, p.223
Chucking machine turns, bores, faces, IE, 5/13, p.155

Shenango Furnace Co.:
Shenango-Penn Div. buys R. D. Wood, B, 5/20, p.35

Schick Inc.:
Heat treating toughens stainless shaver heads, 3/4, p.71

Signode Steel Strapping Co.:
Mobile strapping station, IE, 2/4, p.102

Singer Mfg. Co.:
Di Scipio: Product development and diversification, sales gains, 2/4, p.34
Global marketing success, 4/8, p.103
How to pick best new markets (Falls tech.), 3/4, p.54

Smith Corp., A. O.:
Chyle visits Russia: Labor shortages spur technology, 3/11, p.100
Drops process equipment line, 2/4, p.51
Expands Electric Motor Div., B, 5/27, p.31
Laser welds metals, 3/4, p.20

Society of the Plastics Industry:
Meeting: Plasticsmakers woo design engineers, 2/11, p.29

Sommerfield Machine Co. Inc.:
Buys Sidney Machine Tool, B, 1/14, p.28

Sonotone Corp.:
Moving operations, B, 3/11, p.35

Southwest Products Co.:
High capacity bearings work in cold, heat, IE, 6/17, p.134

Sovereign Steel of Texas Inc.:
Building steel mill, Maydelle, Tex., 4/29, p.29

Sparton Corp.:
Buys Colvin Laboratories, B, 6/24, p.35

Spaulding Fibre Co.:
Resin fiber boards, IE, 4/22, p.225

Sperry Products: See Automation Industries

Sperry Rand Corp.:
Laser market forecast, 1/21, p.18
Laser pumped by gallium arsenide diodes, 2/18, p.20
Postprocessor (SYMPAC) added to direct NC systems, 2/25, p.59
Subsystem performs offline data processing, IE, 1/21, p.87
Univac introduces big little (17 lb) computer, 1/28, p.17
Univac (Retterer): Marketing computer role, 2/11, p.176

Square Wheel Co.:
Abrasive belt grinder, IE, 5/13, p.158

Stanco Mfg. & Sales Inc.:
Axial piston pump—constant pressure, IE, 2/11, p.188

Standard Oil Co. of N. J.:
Rosow: Cites need for better manpower management, 4/1, p.25

Standard Pressed Steel Co.:
Bolt locks tight if nut loosens, IE, 2/4, p.105
Hallowell: Economic security crisis calls for capital outlay, 2/18, p.31
Hallowell: Inventories, don't overinvest, 2/18, p.60
Product line diversification, 2/4, p.35
Quality assurance service (IDQA), marketing reliability, 1/28, p.53
Strength feature of titanium fasteners, IE, 6/10, p.190

Standard Screw Co.:
Machine straightens, travel cuts steel, Western Cold Drawn Steel Div., 6/3, p.35

Stanley Works:
Forms Stanley-Titan Pty Ltd., Tasmania, 5/27, p.33
Strapping dispensers, IE, 2/18, p.116

Stanton & Stavely Ltd.:
Coal injection system, Nottingham blast furnace, 1/14, p.48

Starrett Co., L. S.:
Employee completes 71 years employment, pic, 2/18, p.102

Stauffer Chemical Co.:
Joins Heraeus (Germany) to market electron beam furnaces, 4/8, p.27

Stepless Controls Corp.:
Solid state speed controller 'Speedprop.,' IE, 1/21, p.92

Stevens Mfg. Co.:
Forms subsidiary in Ontario, B, 2/11, p.35

Stocker & Yale Inc.:
Optical comparators and locating device, IE, 5/13, p.156
Screen comparator with vertical optics, IE, 6/3, p.114

Stokes Corp., F. J.:
E-Flag award presented to Garza (firms selling overseas through Stokes), 4/15, p.121

Studebaker Corp.:
1963 predictions (Egbert), maps drive to make cars pay off, 2/25, p.93
Auto Familia — tomorrow's car (pic), 2/11, p.166
Guthrie, new chairman, 6/17, p.110

Studebaker Hydraulic Products Co.:
Div. of Jones-Superior, B, 2/4, p.28

Stueck Inc., W. Whitney:
Press brake features, IE, 3/18, p.187

Summerill Stainless Tube Div.:
Drawing process makes smooth stainless tubes, 3/18, p.108

Sun Oil Co.:
Grease effective on bearings at high temps., IE, 1/14, p.94
Nonstaining cutting oils, IE, 1/28, p.111

Sunbeam Equipment Corp.:
Automatic washing-rinsing-drying unit, IE, 1/7, p.304
Furnace redesign, IE, 3/18, p.188

Sundstrand Machine Tool Co.:
Tape controlled turret machines for Alco, 1/7, p.35

Sunnen Products Co.:
Gages, honing tools, improvements, IE, 4/22, p.218

Superior Tube Co.:
Buys Molecu-Wire, B, 2/4, p.28
Superconductive wire, high ductility, 5/6, p.87

Survey Research Associates:
Dr. Laitin: Rules on how to counter employee resistance to change, 3/11, p.29

Sylvania Electric Products Inc.:
Big power press, Towanda plant, 4/8, p.25
Cutting cams, programer panel system, TO, 5/6, p.20
Finley: Purchasers new goals (value, function buying), 1/7, p.292
Machine tool system cuts cam cutting time, IE, 5/13, p.155
Nuclear fuel elements made nuclear test flexibility, 5/6, p.87
Temperature metal-ceramic coatings protection, 5/13, p.84

Systems Matrix Inc.:
Conveyor covers cut damage, IE, 1/14, p.100
Infrared detectors protect diecasting equipment, 6/3, p.60

T

20th Century Sales Corp.:
Dual spindle for gun drilling, IE, 4/29, p.102

Tabor Instrument Corp.:
Bar turning unit redesign, IE, 5/27, p.146

Tann Corp.:
Congress Tool & Die: Eight stumbling blocks to effective design, 1/7, p.282

Taylor Chain Co. Inc., S. G.:
Buys Kiln Chain, B, 5/20, p.35

Taylor Corp.:
Copper clad laminated plastic, 4/1, p.52
Glass-phenolic plastic laminate, heat resistant, IE, 5/13, p.157

Taylor Instrument Companies:
Unit checks liquid level, IE, 1/7, p.313

Taylor-Winfield Corp.:
Flash buttwelder joins bandsaw blades, IE, 6/3, p.116

Techtmann Industries Inc.:
Rotary table for heavy loads, IE, 1/14, p.95

Tempil Corp.:
Refractory paint resists heat, IE, 3/4, p.119

Texaco Canada Ltd.:
Aluminum heat exchanger beats corrosion in refinery, 3/4, p.19

Thermacote Co.:
Tig welding torch, IE, 4/15, p.137

Thermatool Corp.:
High frequency resistance welding unit for Page-Hersey Tubes, 3/4, p.31

Textile Machine Works:
Gun drill for Heald Bore-Matic, 2/11, p.92

Thiokol Chemical Corp.:
Atkinson: Growth from market diversification, 2/4, p.34
Ray Wiese, new type of manager (cover pic), 3/18

Thomas & Baldwins Ltd., Richard:
Computer system: How to automate a steel plant, 1/14, p.42

Thomas & Betts Co.:
Grinders for diemaking, 3/18, p.111

Thompson Ramo Wooldridge Inc.:
1963 defense spending predicted: J. D. Wright, 1/7, p.19
Computer for oxygen furnace, 2/25, p.20
Dr. Ramo: Foresees shortage of unskilled labor, 5/20, p.18
NC system works from computer produced tape, IE, 1/14, p.93
TRW moving operation to Cleveland, 6/24, p.33

Thomson Industries, Inc.:
Linear roller bearing dev., 5/27, p.25

Thomson Steel Polishing Co.:
Vinyl coating for stainless, aluminum, IE, 6/3, p.116

Thyssen-Hutte, August:
Merges Phoenix-Rheinrohr, 6/17, p.118

Timco Inc.:
Coating parts for electronic components makes soldering faster, 4/8, p.58

Timken Roller Bearing Co.:
Expands, Canton and Columbus, B, 6/24, p.33
Expands South African plant, B, 6/24, p.35
Machine capability studies, 6/17, p.29
Ultrasonics check pressure loss (leaks in pipe fitting, valves, etc.), 6/24, p.84

Temescal Metallurgical Corp.:
Electron beam welding power supplies, IE, 4/15, p.141

Tinnerman Products Inc.:
Buys Dominion Fasteners Ltd., B, 6/3, p.35
Plastic fastener dev., nylon expansion type, 6/3, p.70
Push-on fastener capped with plastic, IE, 2/11, p.189

Tool Steel Gear & Pinion Co.:
Plans Canadian subsidiary, B, 3/11, p.35

Torrington Co.:
Research center, B, 6/24, p.35

Towmotor Corp.:
Pancake engine on lift trucks, IE, 5/27, p.143

Townsend Co.:
Cold heading techniques, Dunn Steel Div., 5/27, p.96

Toyo Kogyo Co. Ltd.:
Automated production control system, 6/10, p.100

Trador Mfg. Co.:
Sheet metal clip-shear, IE, 4/15, p.141

Trundle Consultants Inc.:
Audit purchasing for greater profits, 1/7, p.141

Turco Products Inc.:
Turbulator tanks, fast cleaning, IE, 4/29, p.98

Tuttle & Bailey:
Efficient layout increases assembly, 4/8, p.69

Twin City Testing Corp.:
Betascope checks alloys, IE, 4/8, p.123

Tysaman Machine Co. Inc.:
Buys Ty-Sa-Man (Tenn.), 2/4, p.28

U

Udylite Corp.:
Bright nickel plating finish, Dur-Ni, Satylite process, 6/24, p.31

Unimation Inc.:
Robot type handling devices on production jobs, 2/25, p.49

Union Carbide Corp.:
Auto stainless corrosion, 10 minute test dev., 1/28, p.58
Birny Mason: Inhibiting tax structure, 5/13, p.19
Changes name of Haynes Stellite, B, 3/11, p.35
Surveys stainless users (knowledge of grades and properties), 4/22, p.29

Union Carbide Stellite Co.:
Alloy (Hastelloy X) anchors hold furnace refractory, 6/17, p.74

Union Steel Corp.:
Sold to Sharon, 1/14, p.27

United Aircraft Corp.:
Hamilton Standard's Marshall: Man on moon would stimulate business, address before analysts, 4/29, p.27

United-Carr Fastener Corp.:
Chrome plated plastic auto parts, 4/22, p.200

United Engineering & Foundry Co.:
Buys cold melt induction furnace, B, 2/11, p.33

United Nuclear Corp.:
Purity tester, helium and argon, IE, 4/15, p.134

United Process Machinery Co.:
Quail—new plastic molding unit, IE, 6/17, p.135

U. S. Baird Corp.:
Name change with purchase of U. S. Tool, 5/27, p.33

U. S. Burke Machine Tool Co.:
Defect etching machine, 2/4, p.41
Horizontal mill, optional features, IE, 6/17, p.132
Power feed table added to options on milling machine, IE, 2/25, p.116

U. S. Electrical Motors:
Enclosed and explosion proof motors, IE, 1/21, p.89
Pump motor, IE, 3/25, p.193

U. S. Electrical Tool Co.:
Snagging grinder features, IE, 1/21, p.89

U. S. Industries Inc.:
Turnover attachment for Transfe-Robot, IE, 6/24, p.135

U. S. Rubber Co.:
Develops Expanded Royalite, a thermoplastic laminate, 5/20, p.55

U. S. Steel Corp.:
American Bridge spins cables for Staten Island-Brooklyn bridge, 3/18, p.112
AS&W: Rod mill rolls ground at Cuyahoga Wks., 2/4, p.42
Blough: Spending habits, 4/15, p.17
Blough: Steel labor contract may not be reopened this spring, 2/4, p.17
Chicago S. Works: Pressure pouring process (Amsted), 6/17, p.17
Columbia-Geneva: Closes Pittsburg, Calif., facilities, 6/17, p.33
Continuous casting unit, annual report gives 'peek', 3/25, p.31
Cor-Ten used for flooring hog pens, 1/28, p.20
Duquesne Wks., new blast furnace '*Dorothy*', 2/4, p.56
Duquesne Wks., automated oxygen furnaces, 4/15, p.33
Duquesne Wks., blast furnace has third bell, 6/10, p.104
Duquesne Wks., paper tape controls new blast furnace, 5/27, p.18
Earnings at ten year low despite sales increase, 2/4, p.18
Economics lesson: Only profits solve unemployment, 3/25, p.28
Gary Wks.: Adds continuous heat treat line for plate mill, 1/4, p.28
Homestead District Wks.: Radio remote control directs slag removal, 4/22, p.35
India's Bokara mill feasibility study, 5/13, p.91
Lake Michigan submerged land reclaimed for steelworks, 5/6, p.18
Revisions in stainless prices, 2/25, p.87
Scrap cutting dock, gantries equipped with powder cutting torches, 6/10, p.115
Steel dumping charge against French pipemakers, 1/14, p.17
Steel dumping charged Japan by Columbia-Geneva, 4/1, p.24
TC&I canmaking facilities, thin tin plate, 1/7, p.33
TC&I thin tin plate mill, Fairfield, Ala., 1/14, p.27
TC&I new cold reduction mill, Ala., sheet steel and tin plate rolled, 5/13, p.29
Worthington: Lock-step technology needed, 1/21, p.25
Youngstown Wks., two new finishing lines and annealing furnaces, 3/18, p.35

Univac: See Sperry Rand

Universal-Cyclops Steel Corp.:
Buys Alleghany Steel Band and Bowman Steel, B, 4/22, p.35
Expands, adds vacuum arc remelt furnaces, B, 3/18, p.35
Stainless price changes, 3/11, p.72

Universal Engineering Co.:
Merges sales firm, B, 1/28, p.32

Universal Match Corp.:
Buys Winsmith and Black Tool, B, 4/22, p.35

Uresco Inc.:
Magnetic particle unit, IE, 2/25, p.118

V

V & O Press Co. Inc.:
Super-T press line, 15 to 75 tons, IE, 5/20, p.114

Vacuum Specialties Inc.:
Vacuum hot press sintering furnace, IE, 2/18, p.118

Vanadium-Alloys Steel Co.:
Foreign holdings, B, 3/11, p.35
Buys Armetco, B, 5/20, p.35
High vacuum furnace goes on stream, pumping speed, 6/17, p.76
Roberts: Competition from European steelmakers, 3/11, p.17

Van der Horst Corp. of America:
Porus-Krome process, plastic lubricant, 4/1, p.52

Varian Associates Inc.:
Brazing with electron beam, vacuum lock, 4/29, p.20

Veeder-Root Inc.:
Acquiring Peck Stow & Wilcox, B, 4/22, p.35

Veet Industries Inc.:
Short run drilling machine, IE, 3/11, p.116

Verson Allsteel Press Co.:
Aluminum beer cans impact formed, 5/13, p.82
HerForming cold slugs, 3/4, p.20
Jumbo hydraulic press (hot platen) for precision layup forming, Goodyear, 6/3, p.113

Code: B—*Briefs;* IE—*Industrial Equipment;* TO—*Technical Outlook*

Spotting machine for stamping dies made with four screw jacks, 2/25, p.20

Vibrodyne Inc.:
Vibratory cleaning-small parts, IE, 1/7, p.305

Victoreen Instrument Co.:
Technological lead, 4/15, p.18

Vitro Minerals Corp.:
Sold, B, 6/17, p.33

Volkert Stampings Inc.:
Buys Pennsylvania Tool, B, 4/8, p.28

Volkswagen:
Gap presses for roof stamping, automatic operation, 2/4, p.27

Volta Aluminum Co.:
Aluminum smelter in Ghana, B, 3/18, p.35

W

Wachs Co., E. H.:
Pipe saw cuts, bevels, IE, 4/15, p.141

Wadell Equipment Co.:
Automatic chucking unit, programmer, IE, 3/18, p.188

Wah Chang Corp.:
Lower cost dies for tungsten swaging, 6/24, p.18

Walker Mfg. Co.:
Chambered pipe exhaust on '64 autos, 3/4, p.17
Chambered pipe exhaust system eliminates muffler (probably for Thunderbird), 3/11, p.90

Wall Colmonoy Corp.:
Spraywelder for low oxyacetylene pressure, IE, 2/18, p.115
Spraywelder exhibited, IE, 4/15, p.137

Wallace Products Corp., B. E.:
Aluminum gantry, telescoping legs, IE, 2/11, p.190

Wallace Supplies Mfg. Co.:
Plunge cutting unit, IE, 5/20, p.112

Walworth Co.:
Moves to Calif. cut costs (Pacific time lag), 1/21, p.39

Wapakoneta Machine Co.:
Buys Calif. Saw, Knife & Grinding, 4/29, p.30

Warner & Swasey Co.:
Chucking automatic (4-AC) does heavy metal cutting, 5/27, p.149
Lathe using preset, quick change tooling, TO, 3/18, p.20

Washington Scientific Industries Inc.:
Jig borer, tapper, accuracy, cost fortes, IE, 6/3, p.115

Waterbury Farrel Foundry & Machine Co.:
Mill rolls strip up to 8 in. wide, IE, 5/20, p.113

Wean Mfg. Co. Inc.:
Stacker crane works storage area alone, 1/21, p.39

Webster Mfg. Inc.:
Buys Spinning & Stamping, B, 3/4, p.33

Wedgelock Corp.:
Pneumatic Speedrunner tool fastens sheet metal, IE, 1/7, p.314

Weirton Steel Div.:
Continuous casting unit installed, 5/20, p.33
Electrotin line revamped, 5/27, p.88
Resleeving saves worn plater rolls on electrolytic tin line, 3/11, p.62
Tin plate foil, new dev., 5/20, p.17

Wel-Fab Industries:
Pallet type box, folds fast, IE, 5/27, p.152

Weld Tooling Corp.:
Device burns, bevels holes, IE, 2/4, p.106
Magnets position burning, beveling unit, IE, 2/11, p.186

Wells & Sons Inc., W. F.:
Metal cutting bandsaw for culvert pipe, IE, 6/3, p.114

Wessendorff, Nelms & Co.:
Nelms: Distributors unique in economy, 1/14, p.86

Western Electric Co.:
Telephone electronic system operates in microseconds, 2/11, p.118
Thin film resistor circuits production, 4/22, p.33

Western Technology Inc.:
Chemical milling forms intricate shapes, IE, 1/14, p.103

Westinghouse Electric Corp.:
Amplifier circuits, solid state (cover), 4/29, p.40
Arcwelder designed for heavy work, IE, 6/24, p.138
ASTME progress award to Price, 5/6, p.27
Burnham addresses Westinghouse Forum, aims at key cost areas, 6/17, p.27
Buys Controls Div. of Hagan Chemicals, 4/29, p.29
Compact welder features silicon rectifiers, IE, 2/25, p.121
Cresap: Computer controlled rapid transit predictions, 1/7, p.20
Cresap: World market challenge, 3/4, p.106
Derderian addresses ASTME on overseas marketing, 5/20, p.28
Digital controls for hot strip mill, 4/29, p.18
Dip paints-light fixtures, Cleveland, 3/25, p.74
Insulation system for motors in high temps, 3/11, p.18
Laser machine, researchers report, 4/8, p.71
Lubricant-dry for space tests, 6/3, p.60
Lubricant-self, tougher, 4/1, p.20
Lubricant for superslippery family of materials, TO, 3/18, p.20
Mechanical speed reducers on shafts, flanges, IE, 4/29, p.103
MHD generator with superconducting magnet, 1/14, p.17
Permanent magnet, on-off feature (research lab), 2/18, p.66
Plasma beam, hotter than sun, 5/20, p.31
Portable lapping, polishing machine (Mazur), IE, 5/13, p.162
Radiometer measures laser beam energy, IE, 3/25, p.190
Salt water conversion process (vapor), 2/18, p.18
Semiautomatic welder, 200 amps, IE, 6/3, p.115
Sheet flatness measured, 1/14, p.20
Superconducting magnet system, IE, 4/8, p.116
Superconducting metal, strip-sheet form, IE, 2/25, p.114
Tantalum alloy (new) for high temp. work, 1/14, p.26
Twin magnet brake, IE, 5/13, p.161
Ultrasonic thermometer takes ocean temperatures, 4/15, p.18
Welder efficient on production work, IE, 5/20, p.117
Welders want automation, quality (Abel), 4/22, p.20

Westinghouse Machine Tool Electrification Forum:
Speakers, 6/17, pgs. 17, 18 and 27.

Wetmore Tool & Engineering Co.:
Buys Gun Drill Div., P&W, 6/24, p.35
Continuous buttweld pipe mill, Benwood, W. Va., modernized, 1/7, p.33; in operation, 3/4, p.76

Wheeling Steel Corp.:
Contracts for Steubenville, 5/20, p.33
Contracts for galvanizing line equipment, 3/18, p.35
Expansion and improvement contracts, B, 6/24, p.33
Kirkpatrick: Low inventories cushion economic downswing, 1/14, p.17
Kirkpatrick: You can't pinpoint steel price impact on cost of living, 4/22, p.26
Price increases, 4/15, p.28
Steele (AISI address) stresses manpower needs, 5/27, p.24
Vertical strip motion simplifies gage unit, Yorkville plant, 4/29, p.52

White Motor Co.:
Buys Motec, 1/28, p.32

White Sewing Machine Corp.:
Buys Jerguson Gage, B, 6/3, p.35

Whiting Corp.:
Tractor wheels, tracks and road, IE, 1/7, p.314

Whitney Mfg. Co., W. A.:
Hydraulic duplicating press, IE, 4/22, p.223
Hydraulic gang punch, IE, 1/21, p.94

Wiedemann Machine Co.:
Press positions and punches holes fast, IE, 5/6, p.153

Wiggin Works, Henry:
Punched cards operate press and manipulator, 1/14, p.39

Williams Bros. Co.:
Contract for laterial pipeline, 1/21, p.37

Willey's Carbide Tool Co.:
Insert shapes cost less, 6/24, p.81

Willys Motors Inc.:
Changes name to Kaiser Jeep, B, 4/22, p.35

Wilton Tool Mfg. Co.:
Buys Boice-Crane, B, 3/25, p.35

Winsco Instruments & Controls Co.:
Instrument records temperature two ways, IE, 5/6, p.142

Winsmith Inc.:
Worm gear motor series, IE, 5/6, p.140

Wintriss Controls: See Industrionics

Wisconsin Centrifugal Foundry Inc.:
Buys Waukesha Smelting, B, 6/3, p.35

Worcester Pressed Steel Co.:
How job shops should buy capital equipment, 4/1, p.44

Worthington Corp.:
Consolidated divisions at Harrison, B, 5/6, p.35
Mikulak: Welding estimate, semiautomatic vs manual electrodes, TO, 5/6, p.20

Wyman-Gordon Co.:
Buys interest in Reisner Metals, B, 1/14, p.28

XYZ

Xerox Corp.:
Aperture card making machine, IE, 5/20, p.113

Yale & Towne Mfg. Co.:
Lift truck attachment, IE, 5/13, p.164
Merger proposal with Eaton, 4/8, p.28
Pallet truck for variety of big jobs, IE, 2/18, p.118
Three transmissions offered for lift trucks, IE, 6/10, p.185

Yawata Iron & Steel Co.:
Way to recover gas from L-D converters, 1/7, p.166

Youngstown Research & Development Co.:
New Taylor rolling mill for thin tin, 4/15, p.17

Youngstown Sheet & Tube Co.:
Cold reduced sheet mill (80 in.) planned for Indiana Harbor Wks., 6/3, p.26
Expansions, Chicago area plants, 3/11, p.68
Fetters: Research facilities, new center, 3/11, p.31
Fetters: Drafting international standards, 2/25, p.28
Glossbrenner: How to prune cost of government, 4/29, p.17
Glossbrenner: No justification for wage or price hikes, 2/25, p.17
Mandatory retirement set, 2/4, p.48

Zagar Inc.:
Open side drill, IE, 4/22, p.220
Variable speed head drive added to drill, IE, 3/25, p.195

Zeiss Inc., Carl:
Masked microscope aids assembly of gyroscopes in dust exhaust hood, 5/13, p.84

Zenith Sales Corp.:
Miguel Jr.: Export of consumer goods restrictions, 3/11, p. 26

Zucon Inc.:
Formed, B, 5/27, p.33